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**Dr. LESLIE C. COLEMAN MEMORIAL
NATIONAL SYMPOSIUM ON PLANT PROTECTION
4 - 6 December 2008
University of Agricultural Sciences, Bangalore**

Souvenir



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Foreword

The first decade of 20th century can be identified as a major landmark in the socio-economic development of Karnataka. The decade witnessed several interesting events in quick succession in the then princely State of Mysore – Asia's first hydro-electric power plant at Shivanasamudra across river Cauvery was established near Mysore, the world's longest power transmission line was commissioned in the state, Sir Ronald Ross carried out part of his studies on malaria vectors at Bangalore when in transit to Gudalur and helped design the underground drainage system for the city to tackle the problem of Gastro-enteritis, Kolar Gold Fields and Bangalore became the first cities in the country to get hydro-electric power and the Indian Institute of Science was established at Bangalore based on the recommendation of Nobel laureate Sir William Ramsay. The impact of these events on the position of eminence enjoyed by the State of Karnataka and the city Bangalore as we complete the first decade of the 21st century is quite obvious and needs no emphasis.

However, another important event that enabled the State of Karnataka to be what it is today, albeit in a very different domain, also unfolded in the same decade. The rulers of the then princely state, visionaries in real sense, clearly recognized the need for strengthening agriculture - the backbone of our economy. One of the important decisions taken by the state was to bring the benefits of science and technology to agriculture by appointing a Government Chemist Dr. A. Lehmann and the establishment of Department of Agriculture. This was followed by the appointment of Dr. Leslie C. Coleman as the first Government Entomologist and Mycologist in 1908 and with this the education and research in entomology and plant pathology was formally introduced in the State.

Dr. Leslie C. Coleman undertook comprehensive studies on pests and diseases of almost all important crops of the state and devised effective control strategies. In fact his introduction of Bordeaux mixture to tackle the problem of kole roga (black rot) of arecanut continues to be an effective 'solution' (both metaphorically and practically) for the disease! Several of his studies both as a researcher and as an administrator helped formulate agrarian practices and policies that virtually prepared the State of Mysore for ushering in the 'Green Revolution' in the following decades.

Dr. Coleman was truly a multifaceted personality, his work on many insect pests and plant diseases has stood the test of time and his studies on the sandal spike disease has been rated as one of finest pieces of scientific investigation of plant diseases. His contributions in entomology, cytogenetics, plant morphology, plant gall formation and even cancer research (post-retirement) truly reflect the wide canvas he painted in his scientific career. Dr. Coleman was way ahead of his times in everything he did; he was instrumental in establishing the Mysore Agricultural and Experimental Union in 1913 and invited farmer members to submit grant proposals for carrying out research – even today this appears a very novel idea. Dr. Coleman was an accomplished scientist, able administrator, policy advisor and above all a well wisher of the farmers of Mysore.

By the time Dr. Leslie C. Coleman remitted office in 1934 he had untiringly served the cause of farmers and agriculture in Mysore for more than 25 years and his stint as the Director of Agriculture, Government of Mysore, for 22 years is perhaps set for posterity! He virtually became a legend in his own life time among farmers of the state of Mysore - his adopted home. The upwelling of love and affection towards Dr. Coleman when he visited Mysore in 1953 (all the way from Canada at his own expense!) was not surprising at all. Such was his passion for improving the farming sector that he even submitted a 70 page report to the Government of Mysore outlining his impressions on the state of agriculture (almost 20 years after he had remitted office!) and possible strategies for improving the lot of farmers.

This souvenir brought out on the occasion of Dr. Leslie C. Coleman Memorial National Symposium on Plant Protection from 4th to 6th December 2008 being held at UAS, GKVK, Bangalore, to mark the completion of one hundred years of the scientific discipline of plant protection in Karnataka attempts to place on record the hard work put in by Dr. Leslie C. Coleman in the unglamorous but acutely essential field of agricultural research through selections from a huge body of literature left behind by him - both scientific and administrative. It also includes photographs and reminiscences about Dr. Leslie C. Coleman, very graciously lent by Ms. Ann and Tom Widdowson (daughter and son in-law) and Ms. Helen Coleman jr. (daughter in-law).

It is only befitting that the country has achieved a record food production of 231 million tons in the year 2007-08 - exactly one hundred years after Dr. Coleman set out on his mission of putting agriculture in the state on a scientific foundation. I am sure Dr. Coleman will speak to us through these pages and inspire all of us to continue the tough task of improving not just the area of plant protection but all facets of agriculture in the country.

It is indeed an honour and privilege for both the agricultural universities of the state to jointly organize this symposium as a tribute to the 'father of plant protection', as Dr. Leslie C. Coleman is affectionately remembered in this part of the country. I wish the symposium all the success over three days of deliberations.

Dr. P. G. Chengappa
Vice-Chancellor, UAS,
GKVK, Bangalore 560 065
4th December, 2008

Message from Coleman's Son

My father was a man who all his life was deeply involved in his scientific interests and who spent considerable energy in pursuing them. As a father he set high standards for his children and showed great pleasure when we lived up to them. This was especially true of our educational endeavours and it would have pleased him, I think, to know that I followed his lead in choosing an academic career. The last time I saw him was in 1954 when he was on his way home from visiting Mysore as an invited guest. He expressed great enthusiasm and satisfaction in all that he had seen and believed that his work there had been very worthwhile. I know he would have been proud to have this symposium named in his honour. Thank you for doing so.

Leslie C. Coleman Jr.

F.R.S. (London)

Professor Emeritus,

Department of Geological Sciences,

University of Saskatchewan, Canada

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Leslie C. Coleman Jr.
Ph.D. (Princeton)

**Professor Emeritus,
Department of Geological Sciences,
University of Saskatchewan, Canada**

Leslie C. Coleman: A Life Sketch

Helen L. C. Coleman Jr*

Leslie Charles Coleman, was the fifth child to our grandparents Elizabeth and Francis Coleman, born on their farm in Ontario on June 16, 1878. The family was huge with seven children, six recorded births at Solina and the seventh at Arthur, Ontario. The brothers and sisters of Leslie included, Bertha May (b. 27 May 1870), Herbert Thomas John (b. 20 January 1872), Norman Francis (b. 9 March 1874), Lewis William (b. 2 April 1876; d. 5 April 1877), Lucile Irene (b. 8 August 1880) and Rufus Arthur (b. 19 June 1884).

Bertha and Louie graduated from the Ontario Normal School and taught school for many years, sharing homes except for the brief interval of Louie's marriage and after retirement living in Fort Lauderdale, Florida or Santa Barbara, California or Toronto in the winters and later in a house next door to Herb's converted boat house. Their lives were devoted to their extended family, travelling, reading, gardening, bridge games, entertaining and keeping informed. At least twice in the 1930s they travelled to England, once to holiday with Leslie and Phebe and their two children. Several times in later years they returned to Europe, often travelling with their widowed brother Rufus. When only they two were left, they moved to smaller quarters on Hampshire Road.

Herbert earned degrees at the University of Toronto and Columbia University, taught at Queen's and moved to the University of British Columbia, where he became dean of arts and science. On retirement he moved permanently to Deep Cove. Norman, a University gold medalist, spent most of his life in the American northwest and became President of Reed College in Portland, Oregon. Rufus was for many years a Professor of English and Department Head at the University of Montana in Missoula. His and Rhibla's home on East Bockwith Avenue was a hospitable stopping place for Louisa and Leslie and their families en route west. For all the Colemans, travels to the shores of British Columbia became a returning source of pleasure.

Leslie's boyhood seems to have been spent in Ontario's Peel County for although he and four of his brothers and sisters were born at Solina, Ontario. Like his brothers, he attended the University of Toronto, in his case at twenty two years of age, for he had taught in primary schools after completing high school and graduated in 1904 with first class honors in Science and English and the Governor General's Gold Medal. He was an Assistant in the Biology Laboratories at the University of Toronto for the year following graduation and in the summer of 1905 he worked in Washington DC in the Plant Pathology labs of the US Department of Agriculture. That fall he entered the University of Gottingen in Germany and graduated three years later with his Ph.D. and a citation *magna cum laude*. His diploma was granted by Kaiser Wilhelm II and is dated 25 February 1908. He accepted the position of Mycologist and Entomologist for the independent Indian State of Mysore in January 1908 and in October of that year he was placed in charge of what was then the Mysore Agricultural Chemist's

Department, including the experimental farm at Hebbal started four years earlier. In 1913, Leslie was named the first Director of Agriculture for Mysore State and except for periods of leave remained in Mysore until 1934.

Ms. Helen L.C. Coleman Jr. is the daughter-in-law of Dr. Leslie C. Coleman Sr.; The article was sent to us by Ms. Ann Widdowson, daughter of Dr. Coleman

A tribute to him, written by L.N. Iyengar in an Indian Scientific Journal in 1954, states that "in 1914-15 he reorganized the entire Department on modern lines with laboratories research stations and a well-knit Extension Service, though he called it by the less spectacular but more descriptive term of Demonstration Sections.... He was among the pioneers of agricultural education, agricultural research,

plant protection and agricultural extension in India. When he retired in 1934, he had left behind him a very well organized Department with sound traditions of research and demonstration". Perhaps he himself was proudest of designing for India's individual farmers a small steel, easily repaired plough and of organizing the state's first sugar factory.

When Leslie was preparing to embark on postgraduate studies, he married Mary "May" MacDonald Urquhart, who was born 19 October 1883 at Oakville, Ontario, the daughter of the local physician, Dr. John Urquhart and May Teeter. Leslie and May met at the University of Toronto when she was a student and he on staff. They married in 1905 and their son John Urquhart was born 3 September 1909, in Bangalore. Because children of colonials were not sent to school in India – "it being bad for their health" - he went for one year to school in Devonshire, England, which he hated, and then at the age seven came back to Canada to live with his Uncle Herbert and Aunt Grace and go to Canadian schools. His mother accompanied John on this trip and then returned to India where she died 10 May 1918 of diabetes. She is buried in the Morris Estate (Honnumatti) at Biligirirangan Hills. The next year Leslie travelled to England and organized university biology classes at the khaki college for Canadian service personnel.

There were several ocean crossings during the family's years in India, both across the Pacific as well as the Atlantic, to England as well as to North America, and on one, after May's death, Leslie met Phebe Ropes, "a well known artist who during the war served in France in canteen service" (*Salem News* 26 September 1923). They were married 16 May 1923 at 43 East 27th Street, New York, the home of Phebe's cousin Fanny Ropes, and then spent several weeks visiting Phebe's family in Danvers, Massachusetts, before embarking in late fall for India, the end of an eight month leave of absence for Leslie. Louisa Elizabeth was born 1 March 1925 in Bangalore and Leslie Charles Jr. the next year, 22 October 1926, in Toronto during his parents' two year home leave. While on leave Leslie Sr. was a visiting professor of Plant Pathology at the University of Toronto and bought the family home on Rowanwood.

Somewhere in these years he recruited Wilfred "Taffy" Davison, a graduate of Guelph's Agricultural College, to go out to Mysore in charge of Livestock. In India Taffy met and married the English trained physician Greta and their affection and care for the Coleman Children made them *in loco parentis* in later years. There is a formally posed photograph of Leslie Sr. and Taffy with multitudes of Indian officials, Leslie Sr. and Taffy draped in floral garlands.

Returning to India in 1927, the family resumed what Leslie remembers as a very English colonial lifestyle, one presumably that had also prevailed during John's early years. The family home was Hillside, adjacent to the Maharajah's summer palace, and the children had the run of the palace grounds when the royal family was not in residence. Phebe stabled her horse with the Mysore Lancers at the Palace and rode daily; the children's pony and donkey "that bit" were stabled at Hillside. Amahs and a French Governess had hour by hour responsibility for the children, including supervision of their meals, but the end of the day – Leslie remembers it as "Whiskey and soda time on the verandah" – was the "children's hour" with their parents. Then they were encouraged to recount

their day's activities – the more dramatic including the sighting of a panther while on a holiday walk with their governess at Kotagiri; another finding, burying and holding a funeral service for a dead rat during community fears of a plague epidemic. This latter telling resulted in emergency transport to the local hospital and inoculation for the two children.

Formal entertaining figured prominently in Hillside life and Leslie Sr., always an agnostic, recalled with exasperation in later years of having to entertain separately the missionaries and representatives of various churches and sects, for few if any of them were friendly to each other. A frequent guest at the Hillside and close friend of the family was Col. Crawford, a coffee planter whose plantation was in the Chikmagalur hills and who, for many years after the Colemans left India, kept their Toronto home supplied with coffee. Less frequent but always warmly welcomed visitors were family members, among them Bertha and Louie as well as Phebe's niece Constance Williams. Servants were plentiful and all wore a silver pin, designed by Phebe, entwining the letters LCC. During the hot summers the family moved en masse to Kotagiri in the Nilgiri Hills – "the spice hills" – south of Bangalore. In the summer of 1932 Leslie Sr. and Phebe took Leslie Jr. and Louisa to England and enrolled them in school at Arlesey Bury in Bedfordshire, run by a Col. And Mrs. Wyndham, he being the younger brother of the Duke of Bedford. The school had disappeared by 1976 when Leslie Jr. revisited Woburn.

While Phebe settled the children in their new surroundings, Leslie Sr. was joined by John and John's cousin Frank and the three spent the summer hiking in Germany. This was a transition time for John – undergraduate days over and medical studies begun. Home base had continued to be with Herbert and Grace, first in Kingston and then in Vancouver, but his early years also encompassed St. Andrew's College in Pickering, Ontario, where proficiency as the school's pipe major was later to impress his younger brother and sisters. From St. Andrew's John went to the University of British Columbia for an undergraduate degree and then pre-med studies, years punctuated by football, student theatre, and meeting a fellow student Sheila Tisball (b. 8 October 1908 in China) – a meeting destined to doom forever his aunt Grace's matchmaking plans for John and his cousin Alice.

At the end of summer of 1932 John returned to Canada, Leslie Sr. and Phebe to India, and Leslie Jr. and Louisa stayed in England. Their first year was highlighted by a visit from Norman who so resembled Leslie Sr. that both children initially mistook him for their father, and summer weeks in 1933 spent with Bertha and Louie who travelled to England to be with the children during school break. Bertha and Louie recalled often Leslie Jr.'s taking his bear Pooh on an outing to London's Round Pond to wash his paws.

By 1934 recurrences of severe amoebic dysentery forced Leslie Sr. to resign from the Indian service, three years after he had been made a companion of the "Most Eminent Order of the Indian Empire" (3 June 1931) by King George V. He resisted further honors for, he said, they would entail expenses to keep up so-called appearances, a life that he felt he did not want and could not afford, one specific example at the time being ownership of luxury cars. The family that spring traveled to the United States, staying first with Phebe's sister Frances (Mrs. S.P. Williams) in Winchester, Massachusetts, and visiting Phebe's father and other family members. Then, while Phebe and the children vacationed in Maine, Leslie Sr. went on to Toronto to arrange for the repossession of the house at 46 Rowanwood and to supervise the uncrating of the furnishings acquired in India and the Far East, among them the carved dining room set, the opium and elephant and tea tables, Phebe's oil paintings, a selection of Oriental rugs, and many silver, rosewood and inlaid ivory pieces.

Rowanwood, as the Toronto house was always called, was spacious and accommodated easily all five returning members of the Coleman family: Leslie Sr. and Phebe back to Canada from India, Louisa and Leslie Jr. from England and John out of his student boarding house to spend his final year of medical school with his family. And the family was soon augmented by the birth of Ann 30 June 1935 and the advent of a resident babysitter, Helen "Toz" Tisball. Helen had moved east with her older sister Sheila

to study voice while Sheila pursued a library science degree and dated John. When he graduated from the University of Toronto, had a memorable reception at Rowanwood, and moved to Sarnia, Ontario, where John practiced until 1938 when he established a private medical practice in Blenheim, Ontario, where Greta practiced medicine and Taffy farmed. Taffy also commuted to teaching duties at the Ontario Agriculture College in Guelph. In the late 1940s he moved to the Department of Labour in Toronto and their family home in Oakville and summer cottage at Gloucester Pool became home bases for younger Colemans after Rowanwood was sold.

On his return to Toronto from India, Leslie Sr. was immediately appointed to a lectureship at the University of Toronto, teaching Cytology and scientific German to senior and graduate students. On the outbreak of war and the enlistment of younger faculty, he took over the introductory botany courses, all on his beginning salary, as he said "his contribution to the war effort." In 1945 he was asked to continue on staff and agreed – provided he received compensation in relation to his duties. Immediately he was made a full Professor and retained an extended teaching and research schedule until his formal retirement in 1948.

Leslie Jr. and Louisa started their Canadian schooling at Rosedale Public School, with Louisa later switching to St. Clement's and then to Jarvis Collegiate because her father felt St. Clement's lacked adequate science equipment, and Leslie Jr. entering the University of Toronto Schools in the seventh grade. Ann's early schooling was at Rosedale and then at Branksome Hall but when her mother died in Toronto (28 January 1946) she went south to Washington DC to live for two years with her cousin Constance Williams until she rejoined her father in Victoria. (Note: Phebe is buried in what is known in the family as The Kingdom, a cemetery in Peabody, Massachusetts for members of the King family. Actually The Kingdom in Leslie's grandmother's time was part of the town of Peabody and in addition to the cemetery encompassed four houses – all situated at the junction of Lowell and Forest Streets and all occupied by Kings.)

Toronto and Rowanwood were very much a focus for family and friends in the 1930s and 1940s. Bertha and Louie often rented living quarters in Toronto during their retirement winters and holidayed with Leslie Sr.'s family in one of three adjoining cottages on Lake Rosseau in summers, the third taken by close family friends, the Duff family. Phebe's closest friend was Mrs. Frank Underhill although their husbands, one a scientist, the other a historian and a socialist, cordially disliked each other. Frequent visitors also included Edith Alexander and Keith McIver, whose famed Toronto home, "The Shack", later often hosted Leslie Sr. and Leslie Jr. at dinners after Rowanwood was sold. Edith's father had been Leslie Sr.'s Professor of English at the University of Toronto, and Keith, a prospector, had guided the Group of Seven on some of their painting expeditions. Cousins who shared Christmas afternoons and on whose island the family spent a summer month in 1935 were the distinguished Canadian afternoons and on whose island the family spent a summer month in 1935 were the distinguished Canadian geologist Arthur Philemon Coleman and his sister, the poet Helena Coleman

(children of Francis and Emeline maria Adams). Other family visitors at Rowanwood included Prof. Mary White of Trinity College's Classics Department; the Dyers (through daughter of Lucius Quincy, brother of A.P and Helena) and also the Beers, whose sons Harvey and Michael respectively were Leslie Jrs.'s school mates. Another cousin was Kenneth Clute who preceded Leslie Jr. at the University of Toronto schools, and also mentioned frequently by Bertha were "the MacKay cousins", descended from William Coleman (b. 6 March 1808). Evelyn MacKay is said to have owned "a very old toddy spoon handed down in the Coleman family". This and "silver spoons in the Coleman family with the griffin crest" are the only recorded material possessions brought from England.

Far from Toronto but also in the late 1930s and 1940s, an unsettling family drama was being played out, for John had enlisted at the outbreak of war. Settled in Duncan BC in 1938 where Sheila's father had retired after a banking career in the Far East, John was beginning a private medical practice – a third generation Urquhart descendant to do so – and the young couple's eldest son, Gerald Urquhart, was born 21 December 1938. Then on 10 September 1939 Canada declared war and John enlisted immediately in the Royal Canadian Medical Corps, serving initially with the Canadian Scottish and the Loyal Edmonton regiments. He was able to obtain leave in the spring of 1940 to see his second son, John Evander (b. 22 April 1940 and recipient of his middle name at request of Cousin Helena Coleman in memory of her eldest brother, Albert Evander), before embarking for England and the completion of his training. From England John was sent to the Mediterranean theatre and landed with the allied forces in Sicily. He moved north with them through Italy before being transferred to the northern European theatre, now as lieutenant-colonel and commander of the 4th Field Ambulance, attached to the Lake Superior Regiment. It was in Holland as the senior officer representing Allied troops who were liberating Rotterdam that John accepted the German surrender of that city and was presented with a trophy that was German commander's citation of proficiency. It was an evil appearing object: very heavy burnished metal, somewhat totem-like, about twelve inches high and six inches in diameter, the top third a carved German eagle with wings outstretched, the middle portion the Nazi swastika inscribed in circle, the bottom third a simple smooth base. It was taken from the desk of the head of the Nazi SS in Rotterdam by members of the Dutch resistance who had summarily executed its owner. They presented it to John as Allied troops entered the city.

At the end of the war in Europe, John returned to Canada and visited briefly with his Toronto family before continuing west. Louisa by then had graduated from Jarvis and enrolled in a biology program at the University of Toronto, probably partially to please her father, but later switched to degree in nursing, graduating in 1948. In her student days she lived in residence while, after Phebe's death and the sale of Rowanwood, the two Leslies retained and shared rooms on the third floor of the house until Leslie Sr. retired and moved to Victoria in 1948. Leslie Jr. like Louisa, had begun undergraduate studies at the University of Toronto, originally in maths and physics, but transferred to honor science (geology) after one year. And then moved to Queen's University, taking his undergraduate degree in 1950 and his MA in 1952.

John following his distinguished war service, resumed in Duncan a life that had been on hold for five years, years when Sheila had the sole responsibility not only for bringing up their two sons but also for running The Grange, the Tisdall family home, and looking after her ailing father. Their daughter, Rosalind Kate, was born 17 May 1946 and their third son, Charles Rufus Tisdall, on 17 January 1948. By 1952 John felt strongly that the increasing encroachment of the government in the practice of medicine might limit his practice and was convinced he needed specialty qualifications to allow him

to continue to mix a general and surgical hospital practice. That next year he and Sheila with Charles spent in Vancouver BC where he obtained his specialty in general surgery.

On obtaining her RN, Louisa had nursed for a year in Dryden, Ontario, and then for part of one summer in Duncan working for John. In 1949 she moved to Ottawa to marry James McDivitt. His graduate studies took them to the University of Illinois, Urbana and those years were followed by a teaching position at the University of Idaho in Moscow, the birth of two daughters, Judith Ann 4 November 1951 and Janeth Kirby 28 May 1953, and service in Ottawa with the Geological Survey of Canada. Their lives then alternated academic appointments and international postings with UNESCO until Louisa's death 8 October 1963 at State College, Pennsylvania. Jan died five years later as the result of a plane crash at Calcutta, India on 13 June 1968.

In 1948 with Leslie Sr.'s move to Victoria BC, the Coleman family focus shifted west after more than one hundred years of concentration in central Ontario. Bertha and Louie had given up their home on Setchell Drive in Deep Cove, where they had been neighbours of Herbert and Grace, to move to 2136 Ferndale Road (4661 Vantreight Lane) and make a home for Leslie Sr. and Ann. And from this home Leslie Sr. embarked on his third scientific career for he promptly accepted a research appointment from the National Cancer Institute of Canada, using facilities at the Dominion Pathological Laboratory at Saanichton, now Agriculture Canada Saanichton.

From the family home now in Victoria, journeys and projected travels continued to highlight Coleman lives. Ann finished her schooling in Victoria, graduated from the University of British Columbia, and visited Louisa in Indonesia. This was for her the beginning of extensive travels and marriage to Neville Haddock, divorce, and remarriage to Thomas Widdoson. Their two daughters Katherine Louisa and Frances Mary were born 30 January 1965 and 2 June 1966 in Hong Kong and the family subsequently lived in California before returning to Victoria.

A return to India was a highlight of Leslie Sr.'s time on the west coast for in 1953, to make an invited four month tour of Mysore State, he interrupted his research at the Dominion Pathological Laboratory. In Bangalore and in his travels throughout the state, he was an honored guest, feted endlessly, but also found time to make extensive notes about the current state of Indian agriculture. Several articles were published on his return to Canada and he had told his Indian hosts some of the material would eventually be included in a projected autobiography. En route home from India he stopped at Princeton, New Jersey, to visit Leslie Jr. and Bubs and again was delighted to be introduced to and honored by some of Princeton University's scientific community.

Leslie Jr. and Bubs (Helen "Bubs" Benger b. 14 August 1929) had met at Queen's University and married 12 April 1952 when Leslie Jr. attained his Master's degree prior to going to Princeton University for doctoral studies. Their years at Princeton resulted in a close relationship with his cousin Edwin Christian "Peter" Hutter whose wife Elizabeth "Duffy" was an editor of *The Papers of Thomas Jefferson*, published by Princeton University Press where Bubs was on staff. The Hutters' three children are Fairfax, John (married to Suzanne Twitchell, daughter: Louise Hancock) and Peter. American history figured largely in the Hutter family for they had bought Thomas Jefferson's estate Poplar Forest from Jefferson and it had remained in the Hutter family until "Peter's" grandfather sold it. The commingling of Colemans and American Presidential families – albeit tangential- is interesting for A.P. Coleman's mother was a descendant of John Quincy Adams, the sixth president of the United States. Jefferson, of course, was the nation's third President.

Leslie Jr.'s graduation from Princeton was followed by a year's teaching at Tulane University (and in New Orleans friendship with another cousin Charles Caliga and his wife Joyce), then a year at Lafayette College in Easton, Pennsylvania, from which the lure of research and graduate students took him to Ohio State University in Columbus and 509 Cliffside Drive. Sheila Ropes Coleman was born a year later, 3 July 1958 and in 1960 he was invited to return to Canada to the University of Saskatchewan. The current family home in Saskatoon was purchased in 1961 and Geoffrey Benger Coleman was born 3 January 1962.

Sadly however, these grandchildren never knew Leslie Sr. for he died 14 September 1954 as a result of an early morning single vehicle car accident while he was on his way to work. His Obituary in both the Victoria Daily Times and the Toronto Globe and Mail quoted Dr. G.W. Warwick, director of the Canadian Research Foundation, Toronto, as saying that Leslie Sr.'s work was "the most outstanding of any research supported by the cancer Institute in Canada." At the time of his death he had succeeded in isolating two bacteria which produced cancer in plants. His ashes, as he had wished, were scattered on the island.



The Victoria Rhododendron Society Newsletter

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V.I.P.s for a Day

Tom Widdowson

My father-in-law, **Dr. Leslie C. Coleman**, was Director of Agriculture for many years in Mysore Princely State, in south India. He founded the Coffee Research Station at Chikmagalur, the University of Agriculture at Hebbal (near Bangalore), researched various insect pests, and so on and so forth (sorry, no rhododendrons!). In 1934, towards the end of his stay in India, he organized the construction of a sugar factory at Mandya, just outside Mysore, even providing financial guarantees for it.

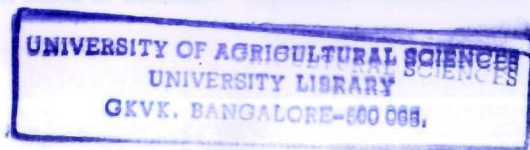
Ann had been told that there was a bust of her father in front of the sugar factory. When our friend Prasad offered to take us to visit Mysore on Thursday, she asked if we could stop at Mandya to take a picture of it. Sure enough, it was there, behind a chain-link fence and a sign saying "NO photography!". So we went around to the main entrance at the side, and had a chat with Security. "This is Dr. Coleman's daughter, who has come all the way from Canada, and would very much like to take a picture of his bust." Security seemed a bit doubtful, but phoned Management. Management said "Dr. Coleman's daughter?!! Bring her to our office right away!"

So we had tea and cookies in the manager's office, then moved to the assistant manager's office, then out to the bust, taking photographs all round. Prasad gave them his cell phone number, for the exchange of photographs, and we were off. Mission accomplished (we thought) and in only a couple of hours.

That evening in Mysore, Prasad's phone rang. "We would like to organize a reception on Monday in honour of Dr. Coleman's daughter and her husband." "I'm sorry, but I don't see how that is possible. Tomorrow, they are going up into the Biligirirangan Hills to visit the grave of Dr. Coleman's first wife. On Saturday, they are going to visit General and Mrs. Nanda up in the mountains in Coorg. Monday, they are returning directly to Bangalore, and Tuesday, they fly back to Canada." "No problem. We will send a car to pick them up at Coorg Monday morning, take them to the reception, and deliver them back to Bangalore by 6 PM."

I rather unkindly told Ann that she would have to make a speech, and that I would have my camera ready to make a video of it to amuse the folks back home. The car actually came up to Coorg Sunday evening, so that the driver would be sure of finding us in the morning. They arrived on the dot on Monday morning, and we were soon heading down to the plains.

Passing through a town near the large and successful Tibetan colony west of Mysore, we saw all sorts of activity, with monks and other Tibetans rushing around. Something was happening! As we reached the entrance to the colony, a banner stretched across the road "Welcome to H.H. the **Dalai Lama!**" made it all clear. The police waved us to a halt and we, together with a few hundred other



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people, settled down to wait. Finally, an unpretentious car appeared in the distance and came to a halt in front of us. A presentation was made. We did not see His Holiness, as he was in the side of the car away from us, but we got a good look at the presenter, who had to be the most beautiful girl in the colony. Then the car continued on into the colony, and we were on our way.

Our encounter with the **Dalai Lama** had made us late, but we made a rest stop (fortunately, it turned out) on the outskirts of Mandya. Arriving at the road leading to the factory, we saw a huge crowd by the side of the road. An accident? No, us! Somewhat reluctantly, Ann got out, and I fell in behind her. The high school marching band was there, as smartly turned out as its American equivalents, but unlike them, all male. Marigold garlands were draped on us, and the drum major escorted us to a platform on the

back of a pickup truck nearby. The band then set off at a slow march towards the factory, with the pickup following behind, halting at the potholes to avoid shaking us off. We waved graciously to the multitude; at least we hoped it

looked gracious and not sheepish. We were given flowers to throw to them. It is not too easy, I found, to throw a flower. Many I threw to the women and children in the affordable housing behind a chain-link fence on our right fell short, to their evident frustration, but I finally got it right. A few of the boys kept up with us and made quite a collection; I hope they did not think that the one with the most would get a prize.

We turned in at the gate where Security had viewed us doubtfully Thursday afternoon and proceeded a couple of hundred metres past the works. At the administration building, we got off and continued with our way lined by school girls throwing flowers at us (some were pretty good shots). A platform had been erected in front of THE STATUE, with two thrones in the centre for us, flanked by lesser chairs for top management and a politician or two. I was provided with a white and gold turban (Ann said it suited me). More garlands around our necks. When we were disappearing, they were removed and more added, presumably provided by other interested parties. Bouquets of flowers, baskets of fruit The management gave us a box made of mirrors, which opened to show a portrait of Dr. Coleman (based on the bust, which was based on a photograph) with smaller portraits of the Maharajah, his Diwan (Prime Minister), and Mahatma Gandhi, together with a laudatory play on the letters of Ann's name. The union gave us a piece of marquetry (inlaid wood) about three feet long and 16 inches wide, with a special inscription.

A politician made a speech in Kannara, the local language. When you are on a platform with a politician making a speech, it is always difficult to maintain a proper expression of rapt attention. When the speech is in a language you don't understand, you wonder, is he telling a joke? Or is he saying something like "If the market for sugar does not improve, there will be layoffs." Then the microphone was passed to Ann. She

apologized for not speaking in Kannara, and thanked them for their wonderful welcome. She was encouraged to say a bit more, and said it. Then it was my turn. I said much the same thing, and added that we were happy to accept the welcome on behalf of my father-in-law, Professor Coleman. This seemed to serve (being the No. 2 attraction has its advantages).

We then adjourned to the manager's office, where we were interviewed by the *Deccan Herald*. The subject of the bad market for sugar came up, and Ann said she hoped it would improve. Our driver then gathered up the

gifts, flowers, fruit and garlands and we headed out of town for a quiet lunch at a roadside restaurant. He dealt with the formidable Bangalore traffic and delivered us back to Prasad's place right on the dot at 6 PM.

The next morning, there were sounds of much merriment from the servants' quarters as it turned out that the local Kannara television had a pretty complete coverage of our performance, starting with Ann's cautious emergence from the car and ending with my speech, and then repeated it. I must say that it looked not too bad.

The Kannara edition of the *Deccan Herald* also had a feature article on us, with a colour picture.

The organization impressed us. Starting from 5 PM Thursday and over the weekend, the management laid on the car, the marching band, the schoolgirls, the politicians, the flowers, the fruit, and the gifts by Monday noon. The union gift was perhaps a customized off the shelf item, but the management gift must have been created from scratch. The event apparently went off without a hitch. The sugar factory, as an old fashioned piece of heavy industry, under state or cooperative ownership, must face an uncertain future in these days of privatization. We hope the people welcomed our visit as a hopeful omen, and not as a promise of more solid, material help. We did notice that they were into the production of ethanol, so maybe they will be able to ride the boom in that.

Dr. Coleman visiting fields and meeting farmers

Selected Articles , Speeches by Dr. L.C. Coleman

Dr. Coleman visiting fields and meeting farmers

The close connection of science with agricultural development is so obvious that it seems hardly necessary to emphasize it. What more or less accurate knowledge we have of the formation of soil and of its adaptation to the various types of crops and to the various types of farming shall require the services of the numerous and intricately connected but imperfectly understood types of soil our knowledge is

What applies to the soil applies to the crops which depend directly or indirectly on it. It must be evident, therefore, that the knowledge of the soil is practically unlimited.

The need for such investigation is this for this reason. In the variety and number of the products of the soil is ludicrously insufficient. In the way of the development of the land already heavy, is likely to be the agricultural population, we shall be able to do much more than we are now doing.

Much can be done in the way of knowledge as regards improved methods of cultivation and manure which are already known. The important function of any Agricultural Development means lacking movements the temptations in a worker in the field. The incident for the future as regards greatly widened and in this work



From what I have seen of agricultural development and deepened, and then is now the even in regards to views are frequently held. Let us take, as an example, the production by plant selection of higher



Science and Agricultural Development

Leslie C. Coleman, M.A., Ph.D.

Director of Agriculture in Mysore

The close connection of science with agricultural development is so obvious that it seems hardly necessary to emphasize it. What more or less accurate knowledge we have of the formation of soil and of its adaptation to the needs of plants has been obtained by workers in the fields of geology, physics, chemistry and biology, and so fill the huge gaps that still exist in that knowledge we shall require the services of workers in these fields for an indefinite number of years to come. The numerous and intricately combined factors which go to make up what is known as soil fertility are still but imperfectly understood and when we come to a consideration of the fertility of particular types of soil our knowledge is still more imperfect.

What applies to the soil applies with even greater force to the living beings, plants and animals which depend directly or indirectly upon the soils for their food and thus for their development. It must be evident, therefore, to all that the scope for scientific investigation in the field of agriculture is practically unlimited.

The need for such investigation is in few countries of the world more insistent than it is in India and this for two reasons. In the first place the number of workers in the field is, in comparison with the variety and number of the problems, the size of the population, and the extent of the country, almost ludicrously insufficient. In the second place we have to face the fact that no matter what may be done in the way of the development of industries in this country, the pressure of population on the land already heavy, is likely to increase. If therefore we are to raise the standard of living among our agricultural population, we shall have to produce very much more per acre than we are now doing. Much can no doubt be done in this direction by the dissemination of knowledge as regards improved stock, improved seed and improved methods of cultivation and manures which are already available and that is a very important function of any Agricultural Department. However, there is a real danger that our efforts in this regard may outrun our real knowledge and examples are by no means lacking in this country of more or less disastrous results following attempts to introduce improvements the value of which has not been established by sound and accurate investigation. The temptations in this direction are very many and very great. I think I may safely say that there is hardly a worker in India who has not taken considerable risks in the recommendation of agricultural improvements, real or imaginary, before he had thoroughly satisfied himself of their value to agriculturists. The insistent demand for practical results from all sides and the knowledge that the provision of funds for the continuance of work already begun, not to speak of the expansion of work into new fields, will depend upon what appear to be practical results, has virtually forced the most conscientious of us to take such risks.

From what I have said, it must be obvious that if we are to meet the needs of the future as regards agricultural development, work in the sciences as related to agriculture will have to be greatly widened and deepened, and a very much larger number of trained men will have to be engaged in this work than is now the case.

Even as regards the investigation work at present being done, it is to be feared that much too narrow views are frequently held. Let us take, as an example, the production by plant selection of higher

yielding strains of the crops already being grown. This is as you no doubt all know, the type of scientific work that has upto the present furnished us in India with the most striking results of the application of science to agriculture. The very popularity of this work and the rapidity with which the cultivation of new and higher yielding varieties of important crops has extended, introduce very definite dangers for the future. It is, I believe, generally admitted that we have in India in general (there are of course many exceptions) and agriculture stabilized at a low pitch of crop production. Under such conditions the amount of crop produced by any variety or mixture commonly grown will depend almost entirely upon the plant foods added each year to the soil. If we now introduce a more efficient plant which is able to utilize more fully the plant foods contained in the soil, we shall almost of necessity upset this equilibrium. It seems to be clear that we shall gradually, it may be imperceptibly, lower the fertility of the soil unless we, at the same time, add to it more plant foods in the way of manures than have heretofore been added. I was, I believe, the first in India to emphasize this point in my presidential address before the agricultural section of the Indian Science Congress about twelve years ago. It has since then been emphasized by others. I mention it here simply to indicate to you the necessity of balanced scientific effort in all directions if we are not to run the risk of permanent injury for the sake of temporary advantage.

From my emphasis of the importance of scientific investigation on a large scale for the development of Indian agriculture some of you may suspect that I am one of those who are blind to the value of pure science, a phase of scientific study the supreme importance of which has no doubt been impressed up on you by your various professors. May I assure you at once that no one places a higher value upon pure science or the acquisition of fundamental scientific knowledge than I do? My whole early training so impressed that upon me that I could not shake myself free from it if I would. It is idle for me to tell you now what dreams I had of tackling problems in pure science when I came to India twenty years ago. Suffice it to say that all those dreams have long since vanished in the struggles with the immediate problems which have continually faced and at times almost overwhelmed me.

I presume some of you have dreams similar to the ones that possessed me. What are the chances of their fulfillment? Few of you will, I fear, be in that most fortunate position of having to worry not at all about making a living and even these few the career of an investigator who gets not even a salary to help support him as a suitable one for their sons. We might perhaps dream that in some distant future science would become so revered in this country that what I call Sanyasis of Science could go from door to door with their scientific labours. I fear, however, for the present most of you will have to map out your career not according to taste but according to necessity. Lucky are the men who in doing so find some opportunity of utilizing their natural abilities and their university training to some degree satisfactorily. Of these, I fear, only the few who are appointed to University positions will have much opportunity for carrying out investigations in pure science and even they are likely to find their paths beset with difficulties.

If we come to the question of applied science opportunities are undoubtedly greater and are likely to become still more numerous in the future. Of such opportunities probably none are fraught with greater importance to the economic life of this country than those connected with science as applied to agriculture. In that weighty volume recently published which seems destined to become a scientific Bible or shall I say Gita to the agricultural workers of this country, special stress is laid upon the importance of enlisting the services of the Universities in the work of agricultural uplift. I agree with the view there expressed and it may be wondered why under these circumstances my support of the scheme to establish an agricultural faculty in the University has in the past been lacking. The reason

is a purely economic one. I am given to understand that Mysore is able to absorb into employment, where

University training can be economically utilized, only about one-half of our graduates. These figures may be incorrect but in any case a large number of our graduates go to swell the ranks of the unemployed. These may remain for several years a severe burden on their parents later to drift into more or less subordinate clerical posts where their training can obviously be but imperfectly utilized. My own view is that we are at present spending a disproportionate amount of our educational budget on our University. It would surely be unwise to establish another and what must be a fairly expensive faculty in the University without at first collecting some evidence to show that the graduates from such a faculty would have some better fate than to swell the ranks of the educated unemployed. Some years ago, I estimated that the demand for graduates from such a faculty to fill special posts where they would not seriously compete with graduates from other faculties would absorb just about half the number of graduates that would be turned out. What is to happen to the other half and have we any definite evidence that they would be prepared to go into the land and if so, whether their training would make them more useful and successful farmers than they would have been, had they undergone training in a vernacular agricultural school or an agricultural school such as Hebbal or as a matter of fact in a high school or in an arts course of the University? One of our most successful agriculturists is an Arts graduate of the University of Madras. Many others have had but very meager general education and no special agricultural training whatever.

In my opinion we must have some definite evidence that the agricultural training that we are able to give in a faculty of agriculture confers definite and special benefits upon those who take it before we should be justified in launching out on what must after all be fairly large expenditure. We should be able to collect some evidence either for or against this assumption within two or three years after the proposed scheme of agricultural colonization comes into being. The essential feature in that scheme is the placing of men trained in agriculture either from a college or from our Hebbal school on suitable areas of Government land and with sufficient initial assistance to enable them to show whether or not they can make a decent living and whether their training has really helped them to that end. If this scheme is a success, as I hope it will be, we can see at least one method of reducing the numbers of our educated unemployed.

The question of the educated unemployed is a serious one and has in my opinion not received the attention it deserves. Much is heard of unemployment in England. I should like to ask you, which is more likely to have serious and permanent consequences to a country, unemployment among the laboring classes, who after all have cost the country but little to educate and who individually can be expected to contribute but little to a country's prosperity, or unemployment among the educated classes from whom must be developed the intelligent leaders in town and village who are now so sadly lacking in Mysore? There can, I think, be but one answer to that question.

Gentlemen, you may consider this a rather unsuitable address for an occasion such as this but I should like to think of you as those who are anxious to put their manhood and their interest in their country above their special scientific interests and would therefore already have begun to think of this country's future in terms not entirely personal. If India in general and Mysore in particular are to progress, that progress must be very largely based upon a development of our main industry, agriculture, and that will call for the best in brain and heart both inside and outside the Government service which this country can produce.

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How can we increase our cultivated area?

Dr. Leslie C. Coleman, M.A. Ph.D.

Director of Agriculture in Mysore

In my second note on the Possibilities of Increasing Agricultural Production in the State, I have pointed out that the Mysore agriculturist has at present apparently more land than he can efficiently cultivate. The average area under occupation during the five years 1915 to 1920 was 7,802,382 acres; the average area under cultivation during the same period was 6,291,600 acres. There was in the possession of Mysore ryots an average area of 1,510,782 acres during these five years which did not bear any crop. If we add to this area, the area under Government assessed waste land, we get the respectable total of 2,303,092 acres which are supposed to be fit for cultivation but which annually bear no crops. But this is not all. The Government date reserves and *amrut mahal Kavals* have already furnished or are likely soon to furnish us with another 600,000 acres available for cultivation while the *Gomal* lands of the State which probably amount to 3,000,000 acres would undoubtedly furnish another million acres of cultivable lands which could be made to yield immensely more productively either as a source of food for cattle or as a source of general agricultural produce than they now are doing.

While undoubtedly some of this land which is now lying fallow and which is giving practically no return lies near the margin of cultivation, the size of this area has undoubtedly greatly contracted during the past few years. Land which it was unprofitable to cultivate when ragi was selling at 18 to 20 seers to the rupee might be cultivated with considerable profit when ragi selling at 8 to 10 seers to the rupee. One is, in fact, forced to conclude that much of our land is lying waste today not because it would be unprofitable to cultivate it, but because our agricultural population is not able to cultivate it with the means at their disposal.

A certain amount of this land which is at present lying unproductive is in the hands of large land owners who on the one hand can not procure suitable tenants for the land and on the other hand have not been able to procure and organize labour for the cultivation of the land themselves. From these have come during the past few years fairly frequent applications for advice as to the possibility of introducing tractor cultivation. Many of our large land holders feel that they will never be able to bring their extensive holdings under cultivation unless and until they can call to their aid the tractor and tractor tillage implements.

What stands in the way of introducing these western machines and methods and why is the Agricultural Department pursuing what must seem to many as an ultra conservative policy with regard to them? In the first place it must be pointed out that the amount of our uncultivated land already under occupancy which is in holdings large enough to be suitable for tractor cultivation forms a very small proportion of the total. The assessed waste land which still remains in Government possession is also for the most part in scattered blocks and much of it is too stony and rocky in character to allow for mechanical cultivation.

It seems to me therefore that under present conditions it would be distinctly unwise, in fact, it would be unwarranted for the State Agricultural Department to spend large sums of money in experimenting with tractors and tractor tillage implements when the results of such work would be

useful for a very small percentage of our agricultural population and could be applied to a very small proportion of our total cultivable area.

It must be made perfectly clear that such experimental work is necessary before any recommendation can be made. A number of different types of tractors and tractor implements have already been tested in the State and many more have been tried in other parts of India but I have yet to see definite evidence that any one of these is adapted to the general conditions prevailing at least in South India and can be confidently recommended to our land holders as a safe investment.

Let us see what the facts are. The initial cost of a tractor and the implements which are necessary to accompany it is fairly high. From five thousand to six thousand rupees would be about the minimum required for a light tractor and its implements while heavy duty tractors cost much more. The depreciation on tractors is very heavy. Even in America where the general skill of farm labour is very much higher than in India the rate of depreciation is usually placed at 20 per cent. The annual repair bill is likely to be fairly heavy and what is much worse, where parts break and have to be replaced it usually takes several weeks to procure the spare parts. A number of cases have come to my attention where tractors have been kept idle for months owing to the difficulty of obtaining replacements.

This is the greatest difficulty standing in the way of tractor use in south India. Ploughing operation must be timed to catch the rains and a delay of several weeks would be practically fatal to cultivation. An agriculturist would therefore have to keep two tractors to insure that his work should not be held up by break downs or would have to keep bullocks and bullock implements in fairly large numbers as a stand by. If he had not a sufficient labour supply even this would not avail him. Finally the actual cost of ploughing with a tractor is at least twice as great as ploughing with bullocks.

A medium tractor can be safely taken to do as much ploughing and cultivating work as six pairs of bullocks and the saving in manual and bullock labour is therefore great. If the large scale agriculturist could be sure that his tractor would not break down or if it did that he would be able to get spare parts within a day or so, this saving in labour might make it worth his while to undergo the extra expense for his tillage operations. Until he has this assurance, I believe, the purchase of a tractor with the intention of depending upon it would be a risky business.

If we cannot in the immediate future expect the tractor to solve the difficulties in the way of bringing the maximum arable land into cultivation and keeping it cultivated, where are we to look for help? It is, I believe, firstly in the rapid introduction of improved bullock drawn implements and secondly in the improvement of our draft cattle so as to make them capable of pulling really efficient improved implements. The opinion which is still at times expressed but which has lost ground rapidly during the past few years that a very large proportion of our draught cattle are incapable of pulling efficient improved implements is quite wrong. A very large proportion of the draught cattle more especially in our maidan districts are capable of working these implements satisfactorily. However, even in the maidan districts there is immense scope for improvement, while in the malnad districts the poor quality of the cattle is undoubtedly a serious obstacle in the way of introducing improved implements. The small Meston plough and the somewhat larger Eureka plough which are at present being sold in considerable numbers in those districts are undoubtedly a big improvement on the country plough but they are far from being an ideal implement and should be replaced with something better as soon as improvement in draught bullocks will admit.

The average size of a holding in Mysore is between six and seven acres. That the agriculturists in Mysore cannot bring this small area under crop each year indicates lamentable lack of efficiency. This lack of efficiency is to a very large extent due to inefficient ploughs. The average holding in Canada is approximately one hundred acres and it is safe to say that a smaller number of labourers are required to cultivate the one hundred acres in Canada than the six or seven acres in Mysore. The peculiar agricultural conditions existing here and the nature of the crops grown would not allow of such a large area being cultivated per man as in Canada – no matter how efficient the implements, but who can doubt that a very great increase of efficiency could be achieved? With the areas of uncultivated land yet at our disposal, it should be possible to increase the area cultivated each year by fifty per cent and the most efficient means to achieve that end is by the introduction of improved agricultural implements and the improvement of our draught cattle to draw them.

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Dr. Coleman's Letter of Resignation

BANGALORE,
24th February 1934

SIR,

I have the honour to place in your hands my resignation as President of the Mysore Agricultural & Experimental Union. This has become necessary on account of my leaving India on retirement. My memories of the Union are of the pleasantest and I wish it every success in the future.

I have the honour to be
Sir,
Your most obedient servant,

LESLIE C. COLEMAN

To,

**The Secretary,
The Mysore Agricultural & Experimental Union,
Bangalore**

**Welcome speech by Dr. Leslie C. Coleman, President, Mysore Agricultural Experimental
Union on its Fifth Annual Meeting
(9th November 1922)**

Mr. Humza Hussain & Gentlemen,

It gives me great pleasure to welcome you to the Fifth Annual Meeting of the Mysore Agricultural and Experimental Union.

Our Union is an organization unique in India. In addition to the usual propagandist work which agricultural organizations are supposed to carry out, it has as one of its chief duties the testing and reporting upon improvements which, as a result of experiments on our farms and in our laboratories, the Agricultural Department recommends for adoption in the State. The scope for work in this direction is unlimited. There is probably no agricultural improvement which can be safely recommended for general introduction in the State without its first undergoing thorough trial under our varying conditions of soil and climate. This work of testing improvements accurately is one involving a great deal of patience and self sacrifice and it is perhaps not surprising that there are still many of our members who have not taken up any definite work along these lines. There are others who, I regret to say, having started such testing work have not carried it out to its conclusion so that accurate figures are not available to tell us of the results. I wish again to insist most emphatically upon the supreme necessity of this kind of work. I am firmly convinced that in no other way can you so further the rapid development of Agriculture in Mysore.

I do not make the above remarks in any fault finding spirit and I wish to bear full testimony to the very valuable work that many of our members are doing in this direction. Recent tours have shown me how carefully this work is being carried out by many and how valuable the results are certain to be. But the volume of this work should be greatly increased if the Union is to do its full duty to the State's primary industry.

It must be gratifying to us all that our august ruler His Highness the Maharaja of Mysore has shown his interest in and appreciation of the work the Union is doing by the signal honor he has recently conferred on two of our members. I am sure you will join with me in offering our sincere congratulations to Messrs. S. Lakshman Reddi and H. Srinivasa Rao on the honour His Highness the Maharaja has conferred upon them. These gentlemen are two of our most active members and I wish to express my own thanks to them for the painstaking manner in which they have co-operated with the Department not only in the way of carrying out tests of improvements but also in popularizing those improvements in their neighbourhood.

The work of these two gentlemen furnishes us with striking examples of what agriculturists in the State can do to further the development of agriculture by testing improvements recommended by the Department and by adopting and popularizing such improvements as are found suitable to their particular part of the country. Mr. Lakshman Reddi has over a series of years carefully tested sugarcane and ragi varieties introduced by the Department. He has now an area of between two and three acres of one of the best of these varieties HM 544, from which he expects to get a crop of 50 tons of cane to the acre. This represents a jaggery yield of between

450 and 500 maunds per acre or over 100 maunds in excess of what has heretofore been considered as a very good crop in this area, an area which is probably the most highly productive sugarcane area in the State. This yield has been made possible by the use of the new variety, and by the methods of the manuring and cultivation recommended by the Department as a result of careful experiment. Mr. Lakshman Reddi's work has already resulted in an appreciable improvement in cane cultivation in the neighbourhood while his estate in the future is likely to be our chief centre of distribution for improved varieties of cane in the Goribidnur Taluk. I have touched upon only one phase of Mr. Lakshman Reddi's activity. He has in addition been a leader in the introduction of improved implements while he has recently taken up work in cooperation with the live stock Section on the maintenance of an improved flock of sheep. Mr. H. Srinivasa Rao has been from the first one of our most active members. He is a man who after an active life in one of the most strenuous Departments of Government service has gone back to the land and is in personal management of his large Estate in Malur Taluk. He has been most painstaking in testing our improved plough and has furnished us with a most valuable report and opinion upon it. He has been instrumental in the popularization of the use of ammonium sulphate for sugarcane while his investigations of a serious pest of the coconut have been very valuable. He has also carried on regular tests on both ragi and groundnut varieties. Whenever Mr. Srinivasa Rao takes up a piece of work I am always perfectly sure that he will carry it out in a thorough and scientific manner, and I look upon him as a sure and steady support to the structure of improved agriculture which we are trying to erect in the State.

I wish to point out that these gentlemen are but two of many hundreds of our leading agriculturists who are actively engaged in every District and Taluk, I might say in every hobli of the State. They are not among those who talk glibly of agricultural improvement in public meetings but at the same time confine their practical observations of agricultural conditions in the State to a complacent survey of their field at the time of harvest or of the golden grain on the harvest floor where they supervise with care the apportionment of their share of produce which has been wrung from the soil by the sweat and toil of others. It is not on such men as these but on men like Messrs. Lakshman Reddi and Srinivasa Rao that Mysore will have to depend for her agricultural regeneration.

We have also to welcome back to us Dr. M.K.Venkata Rao who has returned to us after three years' distinguished study in England and America. Dr. Venkata Rao is, I believe, the proud possessor of more academic letters after his name than any other man in Mysore. He is too modest a man to display his academic honours in a visiting card but were he to do so he would require one several times the ordinary size. I wish on your behalf and on my own to welcome Dr. Venkata Rao and to express our hope that he will be able to put in many years of distinguished service in the State.

I shall not attempt here to detail to you the various lines of work which our members are taking up in cooperation with the Agricultural Department. They extend all the way from the testing of new varieties of crops on the one hand to the improvement of our sheep industry on the other. I should, however, like to draw attention to one line of work which is worthy of serious consideration on the part of our members.

We have recently passed through a very anxious time when it looked as if our dry and wet crops in large sections of the State would be an almost total failure. The rains during the past

month have altered the situation greatly so that now we may look forward to average crops over most of our area. One of the most serious aspects in connection with the shortage of the South-west monsoon in our Maidan tracts has been the disappearance of fodder supplies resulting in the reduction of our cattle to a state of starvation. I need hardly emphasize here the paramount importance of cattle to the agriculturists of this State and the very serious results that would follow the disappearance of any large number of our draught bullocks. It is necessary, I think, therefore, to turn our attention to the question of fodder supply in a way that we have not done in the past.

There are very few crops in the State grown purely as fodder. Certain of the akkadi crops, such as jola, are used in this way but they occupy an insignificant proportion of our total cropped area. Where ragi fails, as it has in some of our taluks this year, it is customary to put in horsegram which yields comparatively little fodder. It has for some years been a question in my mind whether it would not be better in such instances to sow considerable areas of even our red soils with hingar jola. This crop is certain to give a supply of fodder far in excess of that obtained from horse gram, while with favourable rains in the North-east monsoon it is likely to give a fair crop of grain as well. I need hardly point out here that in Chitaldrug District where hingar jola is commonly grown it is by no means restricted to the black cotton soils.

Another crop which appears to hold out considerable promise as a quick growing fodder crop on our dry lands is sunflower. Experience both on the Hebbal Farm and on the Palace Dairy Farm at Rayankere goes to show that this crop withstands drought much better than jola while the cattle eat it with relish. It seems quite possible that it may prove very useful as a subsidiary fodder crop in years when ragi is comparative failure.

The unfavourable conditions as regards fodder this year have led the Department to advocate the growing of hingar jola on a large scale in areas where it is not ordinarily now grown. This is especially the case in Maddagiri Taluk where the fodder famine has been particularly acute. 200 pallas of seed have been purchased and most of this has already been distributed. While much of this will be sown, as is customary, under tanks where the moisture supply is assured a certain amount is being sown on dry lands as well. Small quantities of sunflower seed have also been distributed for trial sowings on dry land. The general results of this work will be discussed in our Journal as soon as they are available. I would suggest that trials of this kind should be carried out by our members in all areas where danger of a fodder famine frequently occurs. The results of the accumulated experience resulting from such trials would, I am sure, be of the greatest benefit to the State as it would put us in a position to know just what we should do in years when the South-west monsoon is a comparative failure. Our Agricultural Department should be something more than a fair weather department able to help our agriculturists in years of favourable seasonal conditions. It should be able to assist them in years of trouble as well and I can think of few more useful lines of work for members of this Union than assisting the Department in the trials of subsidiary crops to increase our stocks of fodder.

The Dewan in his able Dasara Address drew our attention to the great need which exists for increase in the production of food grains in the State. While much can be done and is being done in the way of increasing crop production by the introduction of improved varieties and better methods of manuring and cultivation, improvement on these lines is bound to be gradual. A really rapid increase of production will be possible only if we are able to increase materially the area

under cultivation. That an agricultural family in Mysore can on an average cultivate no more than 6 or 7 acres of land indicates, I think you will admit, a pretty low standard of efficiency.

There can be no question of general land hunger in Mysore for as I have pointed out in a recent article over 1,000,000 acres of our occupied land lies fallow every year. The frequent requests I receive to advice as to the possibility of introducing tractor cultivation point in the same direction.

I have estimated that our agricultural position permits of an increase of 50% in our cultivated area but am convinced that such an increase can take place only through the introduction of more efficient implements. We have upto the present touched but the fringe of the agricultural implement question in Mysore and I think we have made about as much progress here as has been made in any part of India. As I have again and again insisted the implement problem can be solved only by the provision of an adequate staff to work in the adaptation of improved implements to our conditions, by the thorough testing of such implements and by the creation of facilities for the manufacture of implements in India. One of our most important subjects for discussion at the present meeting is that of the new plough which has been designed by us and which the members of our Union have been engaged in testing during the past two years. I wish to bear testimony here to the very important work our members have done in this connection. Without their cooperation I am sure it would have taken the Department many years to make the progress we have been able to make during the past two years. A good deal of impatience has been expressed in many quarters that we have not been able to produce this implement already on a large scale. Our critics must surely be thinking that we possess some magic wand for the purpose. I may tell you, however, that I am at present in touch with four firms, two of them having factories in India who are preparing for the estimates for large scale production. I think I may, without any serious break of confidence, say that it seems quite possible that our new iron works at Bhadravati may help us in the solution of the problem. One great difficulty is of course to produce a really efficient implement which will at the same time be priced so low as to be within reach of a large number of agriculturists. Another is the provision of capital to finance the introduction of this and other implements on a large scale. Our greatest handicap of all is, as I have already pointed out, the lack of an adequate staff for carrying on the work of implement improvement.

My remarks upto the present have been addressed primarily to members of the Union and to practical agriculturists in general. There are with us today, however, some who while they may have a deep interest in agriculture, - and who in Mysore has not? - yet are unable to take any practical part in the development of the State's greatest industry. In what way can they be of use in this work? I take it that it is their duty to make their interest in agricultural development an intelligent one. There is still, I fear, a tendency for many of us to look upon agriculture as a subject upon which any and every one is capable of expressing a valuable opinion which he is apparently able to evolve from his inner consciousness without undergoing the painful process of seriously studying the question. Surely it is time that all of us abandoned such an idea. How are you, gentlemen, going to equip yourselves with the information which will enable you to discuss agricultural questions at least not unintelligently? I can think of no better way than by your subscribing for and carefully reading the Journal which the Union publishes. The Journal will, I believe, bear favourable comparison with any agricultural journal in India. I can speak with freedom on the subject as I have nothing to do with its management and am only an occasional contributor to it. It has an exceptionally able editorial staff and the articles it contains have a definite

practical bearing on the agricultural problems of this State. Take my advice, gentlemen. Read, mark and inwardly digest its contents and when you are next tempted to dilate upon the vast agricultural problems of the State and just how you would usher in the agricultural millennium, you will at least have some solid basis of reliable information to stand upon.

Gentlemen, I might detain you much longer discussing a hundred and one fascinating and important subjects connected with our chief source of prosperity but our programme is a long one. I shall close by expressing our gratitude to you, Sir, in honouring us with your presence today and by trusting that our discussions here will not be a mere uttering of empty words but will be such as to spur us on to greater activity in connection with the advancement of Agriculture in the State.

After Dr. Coleman's speech, Mr. Mir Humza Hussain, the President of the Board of Agriculture and the Member of Council in charge of the Agricultural Portfolio in his speech mentioned the following about Dr. Coleman

.....It was I believe, in the time of that distinguished statesman Sir M. Visvesvaraya that the Department was organized on its present basis and the present President of your Union became its first Director. Dr. Coleman as you all know combines in himself high scientific knowledge with the practical insight of an administrator and under his able guidance the Department has achieved a success and a name in no way inferior to that of any other Agricultural Department in British India.

Dr. Coleman had a unique way of conducting *on farm trials/experiments* what to day we call *Farmers' Participatory Research*! Here is an example where in Dr. Coleman invites applications from farmers to take up experiments.

The Mysore Agricultural and Experimental Union

Programme of Experimental Work for 1923

CIRCULAR

The Department of Agriculture desires to arrange with members of the Union for the carrying out of the following experiments during the coming season:

1. Experiments with Implements

Trial of the Hebbal plough in comparison with any other type of improved plough. The Hebbal plough will be supplied free of charges to intending experimenters on the understanding that –

- (a) It shall be used through one ploughing season and shall be used for ploughing not less than 5 acres of land, and
- (b) It shall be returned to the Department at the end of the ploughing season with a report as to its working in the prescribed form
- (c) Carriage charges will be borne by the Department to and from

Note: Members who have already been supplied with a plough and who wish to continue the trial during the coming season also will be allowed to keep the plough for further trial, if they notify their wish to the Secretary. Ploughs returned by members who do not intend continuing the trial will be made available for trial to members who have not tried them.

2. Experiments with seeds

Trial of selected strains of –

- (a) Ragi – seed enough for 3 guntas each of two of the new varieties will be supplied.
- (b) Groundnut – seed enough for 3 guntas each of two new varieties will be supplied.
- (c) Castor- seed enough for 3 guntas each of any two new varieties will be supplied
- (d) Cotton:
 - (1) Doddahatti – seed enough for 3 guntas will be supplied
 - (2) Sannahatti – seed enough for 12 guntas each of two varieties will be supplied.
- (e) Paddy – seed enough for 3 guntas each of any two varieties will be supplied
- (f) Sugarcane – seed enough for one gunta each of two new Hebbal seedling canes will be supplied

Conditions of supply of seed

1. The seed of each variety shall be sown in separate plots with check plots arranged as per instructions issued by the Department of Agriculture
2. The results of the experiments shall be reported after harvest in the form which will be supplied

3. Experiments with Manures

- (1) Ammonium sulphate and Nitrolium on Sugarcane: Between 12 and 20 guntas of land will be required. Ammonium sulphate intended for experiment will be supplied at cost price; the value of manure per experiment may not exceed Rs. 25. A small quantity of Nitrolium is also available for trial as a manure for sugarcane.
- (2) Manuring of paddy with Oil-cake and Super phosphate: Not less than 10 guntas of land will be required. The manure intended for experiment will be supplied at cost price; the value of manure per experiment may not exceed Rs. 5.

4. Experiments on the Control of Insect Pests

- (a) Sugarcane borer as per instructions to be issued by the Senior Assistant Entomologist
- (b) Pests of stored pulses

5. Experiments on the Control of Fungus diseases

- (a) Black rot of coffee
- (b) Die-back of coffee
(Spraying material and sprayers will be supplied by the Department;
the labour to be supplied by the members)

6. Experiments on Fodder Conservation

Use of sunflower for ensilage – seed for one acre will be supplied free of charge

7. Sericultural Experiments

Rearing: Experimental rearing with seed of new races of silkworms. 100 layings of eggs of selected new races will be issued free for each of 3 experimental rearings on condition that the rearing shall be conducted according to written instructions which will be issued by the Department, and that a report shall be furnished in the form which will be supplied. The cocoons must be sold to the Department who will give 10 per cent above market rates.

Reeling: Foot reeling machines will be lent for 3 months free of charge (conditions similar to those on which ploughs are lent) on condition that they shall be used for reeling at least 10 lbs of silk and that a report shall be furnished of results in the form prescribed by the Department. The experiment may, with the consent of the Superintendent of Sericulture, sub-lend the machine, subject to the same condition. A demonstrator will be sent to instruct the experimenter in the use of the reeling machine.

8. Maintenance of Farm Accounts

Maintaining accounts on the model of the forms drawn up by the Union at the IV Annual Meeting. A copy of the model forms will be supplied on requisition.

Applications from members intending to undertake the experiments should be made to the Secretary, The Mysore Agricultural and Experimental Union, Sheshadri Road, Bangalore, in the following form, the particular experiment or experiments they desire to undertake being specified by being ticked off on this circular.

BANGALORE

LESLIE C. COLEMAN

2nd December 1922

President

The Mysore Agricultural and Experiment Union

To

THE SECRETARY

THE MYSORE AGRICUTLURAL AND

EXPERIMENTAL UNION

Seshadri Road, BANGALORE

DEAR SIR,

I desire to undertake the experiments ticked off above during the coming season. Please arrange to supply the requirements

Yours faithfully

Date and Station: _____

Signature and Address of the Member

Circulars were sent to members separately and far in advance



4. Maintenance of Farm Accounts

Maintaining accounts on the model of the Agricultural Union at the 5th Annual Meeting.

A copy

Secret

form, &

typed

BANGA

2nd Dec

To

The

DEAR

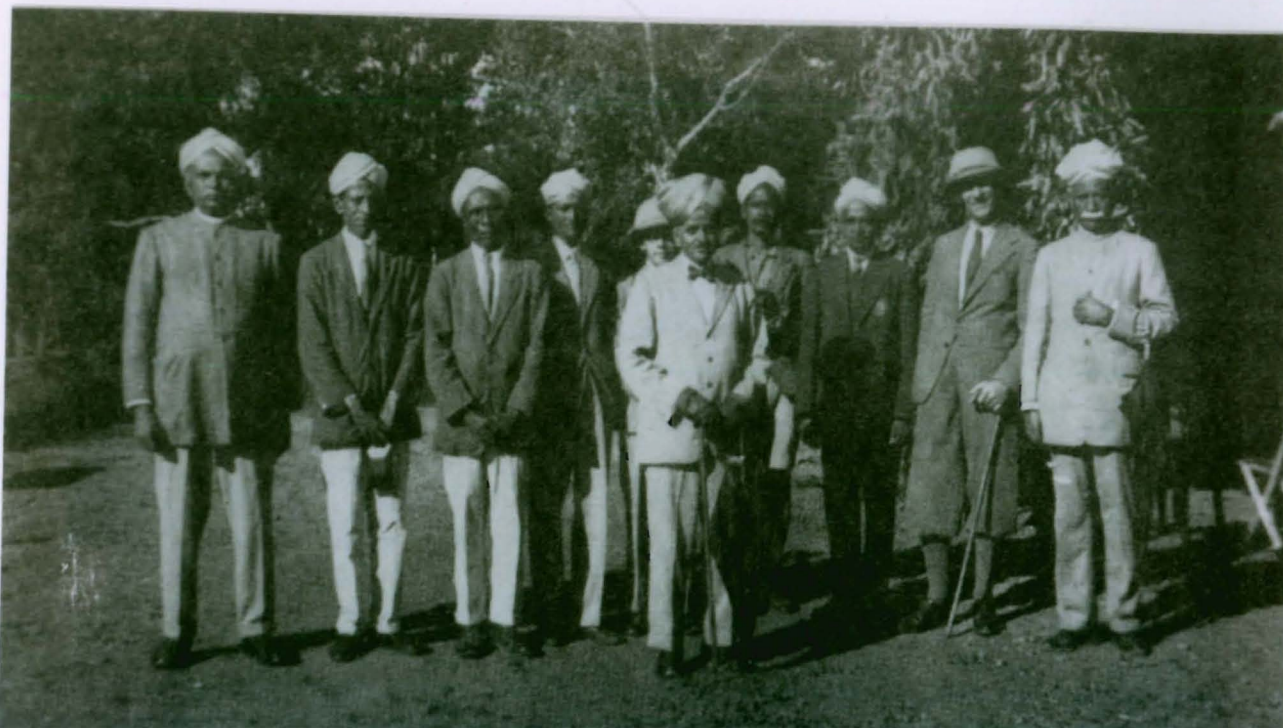


Reproduced from The Journal of Mysore Agricultural and Experimental Station, Vol. 1, 1912.









Visit of H H Maharaja Krishnarajendra Wadiyar of Mysore to the CCRI, Balehonnur in 1931. Dr L C Coleman is second from right, Wilson Mayne is standing behind the Maharaja. K H Srinivasan, Officer-in-Charge of the Research Station is fourth from left.

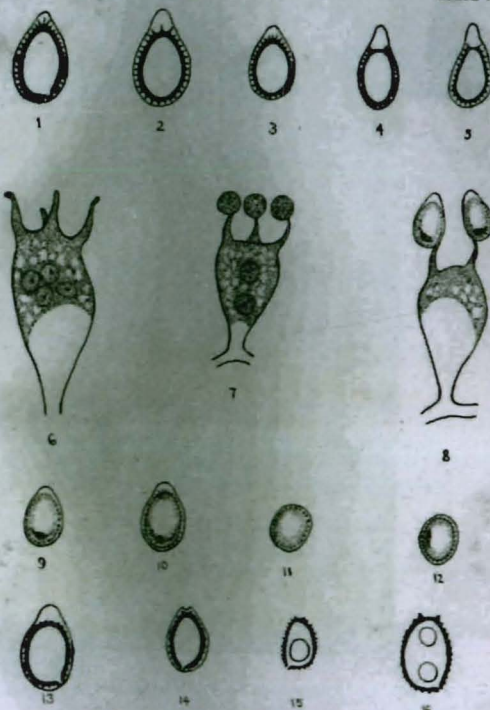
STRUCTURE OF SPORE WALL IN GANODERMA

LESLIE C. COLEMAN

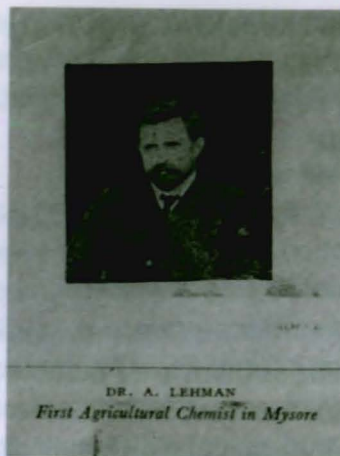
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BOTANICAL GAZETTE, LXXXIII

PLATE V



COLEMAN on GANODERMA



DR. A. LEHMAN
First Agricultural Chemist in Mysore



DR. M. K. VENKATA RAO
First Research Officer in charge of the
Coffee Experimental Station, Balehonnur



DR. K. KUNHI KANNAN
Entomologist & Pioneer Research Worker on Coffee



MR. K. M. THOMAS
First Director of Research, Indian Coffee Board



Mysore Coffee Experimental Farm, Laboratory building - 1924
Balehonnur

THE FOURTEENTH ANNUAL SESSION OF THE AGRICULTURAL AND EXPERIMENTAL UNION
Held at the Daly Memorial Hall on 22nd December 1932

Speech by Dr. Leslie C. Coleman, C.I.E., M.A., Ph.D
President of the Union

Mr. RAJAGOPALACHARI AND GENTLEMEN,

I do not intend to inflict upon this audience a long speech this morning as there are a number of subjects on the programme for discussion. In the first place, I wish to welcome you, Sir, and other visitors to this Annual Meeting of the Union. In welcoming you I trust you will permit me, on behalf of the Union, to congratulate you on your appointment to one of the highest and one of the most responsible offices in the State. As Revenue Commissioner your interest in agricultural work has been known to us all, and I consider and I know that the members of the Agricultural and Experimental Union and the staff of the Agricultural and related Departments consider too, that we are extremely fortunate that you now are in a position to guide the destinies of the Agricultural Department and its activities in the State.

I should like on one or two points to anticipate the report of the Secretary which, I regret to say, is not the most cheerful reading one could imagine. The progress of work of the Union has, I must admit, not been satisfactory. There are a very large number of factors which account for this. As you know, one of the main functions of this Union is to co-operate with the Agricultural Department in the testing, scientifically, of all improvements-improvements either in the production of new seed, new implements, better methods of manuring, better methods of cultivation, control of insect pests and fungus diseases. It is perhaps rather too much to expect agriculturists, even intelligent and progressive ones, at a time when they are finding it extremely difficult to cover the expenses of operations on account of the very depressed condition of the market, to devote a large amount of time and money to carry out experiments. After all, anyone who is familiar with the technique of experimental work in the field must know that experiments cannot be carried out without an outlay on the part of the agriculturists. We attempt to keep that outlay as low as possible and to confine the experiments to small areas, so that the actual amount of labour and supervision is reduced to the minimum. Nevertheless, extra labour and extra supervision are both required if experimental work is to be carried through to any sort of satisfactory conclusion. I appreciate the difficulties of the situation. Nevertheless, I would urge upon all the agriculturists here to-day and all intelligent agriculturists throughout the State that if we are to progress, if we are to improve our agricultural conditions, it must be on the basis of actual field experiments. That, I have mentioned on many occasions at the Annual Meetings of the Experimental Union from its very inception. You cannot entirely depend upon the experiments that are carried-on on our Government farms and in our laboratories to suit all conditions; after all, these are situated in certain definite areas and we cannot spread them over every Taluk in the State. Nobody can foresee exactly whether the results that we obtain on a particular experimental farm, whether it be from a variety of seed, a new implement, new manure or manuring with a different combination of manures, will be applicable to the private farms, say, 100 or 50 miles apart. It is impossible for us to foretell that on account of the peculiar soil and climatic conditions that exist in the Mysore State and their variations which are greater here than you will find in almost any other part of India. One of the main functions of the Union should be to carry out the co-operative tests that are absolutely necessary. I do not think I need say any more on this point. I urge upon the

agriculturists, notwithstanding the present conditions of agriculture, that they should devote time, attention and at least a small amount of money in connection with the supervision and labour. The Union will as far as possible supply seeds and manures for the experiments.

There is another feature of the work of the Union which I regret to say has not progressed. The Secretary reports that it has been extremely difficult to obtain contributions in sufficient number to issue the numbers of the Journal in time. The Kannada Journal, written almost entirely, I believe, by our secretary, is on a different footing and I believe it is looked upon as of very general value to the State. It is quite a different thing with the English Journal. I appreciate the fact that most of the contributions to that Journal, if they are to keep a very high standard, must be furnished by highly trained technical men. That means that the officers of the Agricultural and related Departments must be responsible for the bulk of the contributions. even in this regard, the officers of the Department have hardly come up to expectations. I would urge upon these gentlemen- the gentlemen who have given promises on various occasions to submit contributions-that they should fulfil their duties in this regard. It is not because information is not available in the Department. There is a mass of material collected by the Agricultural officers. I do think it is a great pity that a very large amount of extremely valuable information is not being given out to the public. I am afraid that in the case of some of the officers of the Department who are approaching retirement, a good deal of the information would pass away with them and never be published. I recall that fifteen years ago I myself had taken rough notes of observations on important subjects which, had they been written up fully and published, would have been of value to the general public. These observations are now lost. I think there must be quite a large number of officers who are before me to-day and who are exactly in the same position. I would urge upon these officers the necessity of placing in such a form as can be of general use to the public the information which they have collected over a long series of years of their service. After all, we must remember that we are serving the people. We have no right to allow valuable information to be lost and therefore it should be furnished to the people who pay for it. I am not referring only to the officers of the Department. I am referring also to the large number of gentlemen who are sitting before me to-day and who have collected a great deal of information with regard to local agricultural conditions either through co-operation with the Department or of their own accord. They have collected information which is not directly traceable to the Agricultural Department. They are quite capable of introducing improvements of their own. I realize that private agriculturists in general probably have not much experience in putting their information into a form suitable for publication. What I could urge upon those gentlemen in this. Do not be afraid of your language. We have a staff in our Agricultural Department which is quite prepared to make it fit for publication in proper form and language.

When you were Revenue Commissioner, Sir, you took a particularly active interest in attempting to bring the Vernacular Journal especially to the attention of the Village Panchayats of the State. This Vernacular Journal, I consider, is the best medium we have in the State, at present, for bringing improvements recommended by the Agricultural Department to the general agricultural public. I look upon the Village Panchayats as a whole as the best medium of getting that information to the agriculturists in the State. You sent out definite instructions to the Revenue Officers of the State that the Journal should be popularized among these bodies. I regret to see, now, that the response has been extremely poor. You are now a Member of Government and I would ask you, Sir, to use your influence in this connection. The possibility of improving this Journal and of reducing its cost and similar questions will come before this meeting and definite proposals will be put before us for consideration. I do feel that until we are able to get our Vernacular Journal into the hands of a very

large number of Village Panchayats in the state, we shall not be doing anything like what we ought to do with regard to publicity. Government is giving us a subvention and that subvention should be used in spreading the valuable information among agriculturists. If this is not done, I think, it is high time that the publication of our journal ceased.

I have talked enough, I suppose, on the dark side of the picture. To-day the conditions of the agriculturists in the State, all over India and, I may say, all over the world, are anything but satisfactory. To-day is the very day when we are to make strenuous efforts to improve and increase our efficiency. When ragi was being sold at 10 seers a Rupee, it was not difficult to make a profit from its growth. When it is being sold at something like 20 seers, it is quite a different story and I may say that I can hardly see how those who are depending upon Ragi can get the money to pay for their most important commitment, viz., taxes and in addition to pay for their barest necessities. That means, we must reduce the cost of operations in some way or other, and some means must be devised to increase the efficiency of the agriculturists if they are to stand on their feet.

Gentlemen, there is one bright picture that I must place before you to-day in connection with an important subject for discussion on the programme. Although most agricultural crops are under extremely depressed conditions owing to foreign competition, there is one crop for the production of which a paying price is assured. It is the sugarcane crop. That price, thanks to the foresight of the Tariff Board which is visiting us to-day and of the Government of India, has been assured for the next ten years. That price, I believe, under efficient conditions of cultivation and manuring, will enable the ryot to make a profit. Luckily, the area that can be brought under sugarcane in the State has been enormously increased as a result of the construction of the Krishnarajasagara Reservoir. We have heard in the Legislative Council and in the Press a certain amount of discussion on the subject of sugarcane cultivation and sugar manufacture in the State and I should like to add further, certain general observations. In the first place, I should like to point out to you that the success of sugar manufacture in this State or in any other part of India is largely an agricultural matter. The technique of sugar manufacture has been so advanced in recent years that you are almost sure, with reasonable care, of getting efficiency in manufacturing operations. In the Mysore State, luckily, we are very much better situated with regard to conditions for sugarcane cultivation than in most other parts of India. With an efficient plant working in this State, and with cane grown as it should be grown, I can see no reason why we should not obtain yields approximately to those now obtained in Java. In Java, at present moment, the average production of sugarcane on an area of 4,00,000 acres is about 50 tons per acre. You will therefore see how far we have to go so as to be able to reach the position in which Java stands at present so far as sugarcane cultivation is concerned. We are anticipating during our first year in the Irwin canal area from the ryots' fields a production of 25 tons of cane per acre and we may get more. As at present arranged the tariff on sugar will cease after a certain definite time and within that time we should be able to increase our efficiency in production so as to meet foreign competition. The people of Mysore should not keep idle but make strenuous efforts to make their fields yield greater tonnage of cane. Now, gentlemen, you will see what a bright future and what a task we have before us. Personally I am rather doubtful, even after that period of ten years, that tariff on sugar will be removed. But even under those conditions, I should be personally extremely sorry if we allow ourselves to sit idle and be satisfied with what we can produce now, simply because we can make some money owing to that tariff wall. I see no reason at least 40 tons of cane per acre should not be produced and even if the tariff wall is removed, why the Mysore sugar industry should not be able to stand on its own feet.

There is one other question on which I have to say something. You will remember that in the course of discussions that have occurred during the last two or three weeks on this subject, it has been said that Government should have nothing to do with the sugar industry in the Irwin Canal area and that private enterprise should be encouraged to have its way and allowed to work its own sweet will and that it should be a question of the survival of the fittest. Gentlemen, I think we have already enough evidence in this world to-day of the disastrous effects of that wonderful law of supply and demand and its disastrous effects upon both the agriculturists and industrialists. We must be cautious. Although perhaps you may say I am prejudiced as a Government Officer, I am firm in my conviction that, to safeguard the interests of the ryots as well as of the industrialists, Government must at the beginning at least play an important part in the development of the sugar industry of the State.

I wish again, Sir, to welcome you to our meeting and to express our very sincere thanks for the honour you have done to us in presiding over this function to-day.

Our President, Sir, in his address to the Union, said that the purpose of the Union was to bring together the agriculturists and industrialists of the State and to help them to develop their industries. He said that the Union was not a political body and that it was not to be a platform for the expression of political views. He said that the Union was to be a body of practical men and women who were interested in the progress of the State and who were willing to work together for the benefit of the people. He said that the Union was to be a body of men and women who were interested in the progress of the State and who were willing to work together for the benefit of the people.

The meeting reassembled with Mr. K. V. Krishnaswamy, retired Officiating Director of Agriculture, in the chair. Two more resolutions were moved before the meeting and passed, one electing Mr. K. V. Krishnaswamy for the succeeding Director of Agriculture, as President of the Union and the other appointing Mr. K. V. Krishnaswamy as President of the Union.

Extraordinary General Meeting
(Proceedings of the meeting conducted on Dr. Coleman's retirement)

An Extraordinary General Meeting of the Mysore Agricultural and Experimental Union was held on Sunday, the 25th February 1934, at 4 pm in the premises of the Agricultural Department, Bangalore, as per agenda hereunder:-

1. To consider the financial position of the Union in the light of the recent Government Order regarding the subvention for the years 1933-34 and 1934-35,
2. Accepting the resignation of Dr. Leslie C. Coleman, C.I.E., M.A., Ph.D., President of Union, on the eve of his retirement from service, and
3. Election of new President.

At 4 p.m. Dr. Coleman, our President, and Mrs. Coleman arrived and were led to the assembly hall. After the President took the chair the meeting opened with an invocation. The Secretary read his report which mainly dealt with the difficult position in which the Union stood and submitted the accounts for the previous year. The President moved the adoption of the report and the accounts. These were formally adopted. The Secretary then read before the meeting Dr. Coleman's letter of resignation of his office of President of the Union, which was necessitated on account of his leaving India on retirement. A resolution on the President's resignation was brought before the House by Mr. T. Narasinga Rao and supported by three gentlemen, viz., Messrs. N. Siddalinga Devaru, S. Venkataswami Gowda and J. V. Chennappa. The resolution, the text of which is printed elsewhere, was passed unanimously. Dr. and Mrs. Coleman were then garlanded with loud cheers from the members and to the accompaniment of a song by Sjt. Sreenivasamurthy, an young boy of ten. The President, unable to remain standing, begged pardon of the House and spoke in reply to the resolution, sitting down.

Another important item of the evening's function was the unveiling of the portraits of the late Dr. K. Kunhi Kannan and Mr. B. C. Shantappa who served with distinction in the Entomological Section of the Agricultural Department and passed away suddenly. The Entomological Section of the Department took advantage of the occasion to have the portraits unveiled. Dr. Coleman unveiling the portraits spoke as follows :-

"Gentlemen, One thing more. The Union has asked me to unveil the portraits of two of my old colleagues who have passed away from our midst. I refer to Dr. K. Kunhi Kannan and Mr. B. C. Shantappa. Both of these gentlemen were associated with me in the activities of the Agricultural Department, i.e., in the Entomological Section of the Department, and both of them left very distinct marks on the agriculture of Mysore. I am sure that you will be delighted to have these representations of them to remind you of the distinguished work that these South Indians, shall I say, have done in the service of Mysore."

After tea the members bade an ovation preliminary farewell to Dr. and Mrs. Coleman and they left.

The meeting reassembled with Mr. H. V. Krishnayya, retired Officiating Director of Agriculture, in the chair. Two more resolutions were moved before the meeting and passed, one electing Mr. A. K. Yegnanarayana Iyer, the succeeding Director of Agriculture, as President of the Union and the other appointing a deputation consisting of Messrs. B. Venkatanarayanappa and N. Siddalinga Devaru

to wait upon the Second Member of Council for explaining the position of the Union and praying for the continuance of Government support.

The Meeting terminated with the singing of National Anthem.

The Secretary's Report, Dr.Coleman's letter of resignation, resolutions passed at the meeting and the President's address are published in the following pages.

Secretary's Report

Gentlemen,

I have mixed feelings of pleasure and regret to welcome you to this Extraordinary Meeting of the Mysore Agricultural and Experimental Union.

Under ordinary circumstances we should have met in annual meeting some time in November or December last year. Our uncertain financial position and the unfortunate illness of our President were responsible for the meeting being postponed. As contemplated then the annual meeting should have been held during this month at Mandya so that an interesting field day including visits to the Sugar Factory and the four Government Sugarcane Farms might be arranged. In the meanwhile extraordinary circumstances have arisen. Our President is retiring from public service in Mysore. Almost simultaneously, Government have delayed to sanction subvention to the Union. There is a liability of Rs. 2,265-1-0 as against a cash balance of Rs.254-12-1- to-day. Not having had the slightest suspicion that the subvention would be discontinued, we have incurred expenses. Encouraged by Government in connection with popularizing our Kannada Journal among the Village Panchayets, we have made fairly extensive propaganda and so far enlisted the support of nearly 300 Village Panchayets. Government not having sanctioned and subvention we find now that we cannot satisfy the demand of our own creation. The Journals have been suspended. Our President in the capacity of Director of Agriculture has again addressed Government in the matter. It is too early to say what might be the result of his effort. This is a matter which you will have to seriously consider during this meeting.*

Our President is, as you all know, the Founder of the Union and its President since its formation in 1918 excepting during the periods he was on leave. In the earlier years he was its main support even financially. It is not for me to say anything about his services to the Union or to the State. That will be the subject of a resolution to be shortly moved for your consideration.

If you will permit me a personal note, I beg to say that I have been your Secretary for the last fifteen years. I have tried to serve you to the best of my capacity. It has been my peculiar good fortune and proud privilege to have been closely associated, in however humble a measure, with our President Dr.Coleman during this period. He has been to me, as he has been to so many of us, a source of never failing inspiration and guidance. I am ever grateful to the Union for the opportunities for service I have been afforded. It is now my painful duty to request you to adopt this rather depressing report and the statement of accounts attached.

Resolutions

1. The Members of the Mysore Agricultural and Experimental Union learn with deep regret that their President Dr. Leslie C. Coleman, C.I.E., M.A., Ph.D., Director of Agriculture in Mysore, retires from

**Government have since kindly granted subvention to the Union for two years.*

service and is leaving our country immediately owing to his impaired state of health. They feel that they are losing the services of a friend who had fully identified himself with the Mysore ryot for so many years and was ever a guiding star in all their movements. His practical knowledge of agriculture, his deep insight into the agricultural conditions existing in Mysore and his burning desire to improve the lot of the Mysore agriculturist have stood him in good stead in winning the affections of the Mysore ryot. The great improvements that have taken place in Mysore agriculture ever since his advent bear ample testimony to his ability and far-seeing policy. His stern sense of duty even under the most trying circumstances has been remarkable : an his name has become a household word among the agriculturists for efficiency, disinterested service and kindly fellow-feeling.

The members of the Union desire to place on record their deep sense of appreciation of the very valuable services of Dr. Coleman to the cause of agriculture in Mysore and wish him a long happy, useful and peaceful life in his own country. May he ever have a warm corner in his heart for the Mysore Agriculturist!

Proposer :- Mr.T.Narasinga Rao

Seconders :- Messrs. N.Siddalinga Devaru. S. Venkataswami Gowda and J.V.Chennappa.

Passed unanimously.

2. Resolved that Mr.A.K.Yegnanarayana Iyer, M.A., Dip. in Agri.(Cantab.), N.D.A., be elected President of the Mysore Agricultural Experimental Union in the place of Dr.Leslie C.Coleman, C.I.E., M.A., Ph.D., who has resigned on retirement from service.

Proposer :- Mr. N.Siddalinga Devaru

Seconders :- Mr. M.S. Linge Gowda

Passed unanimously.

3. Resolved that this meeting of the Member of the Agricultural and Experimental Union authorize Messrs. N.Siddalinga Devaru and B. Venkatarangappa to wait on the Second Member of Council to represent to him the present financial condition of the Union and pray on behalf of the Union, for the continuance for some more years of the subvention till now granted by the Government for carrying on the useful work that is being done by the "Union" in the interest of the agriculturists of the State.

Proposer :- Mr.M.S.Linge Gowda

Seconder:- Mr. N.Krishniengar

Passed unanimously.

Dr.Coleman's Reply

Mr. Narasinga Rao, Mr. Siddalinga Devaru, Mr. Venkatasami Gowda, Mr. Chennappa and Gentlemen,

I hope you will pardon me, if I say what I have to say, this afternoon, sitting down. I am still anything but well, and I fear that if I attempt to stay very long on my feet it may not be very good for me. I thank you, Gentlemen, for the resolution that you have passed this afternoon in connection with my service to this Union and to the State and I thank you for the kind words that you have used in supporting that resolution.

During the last two months, when I have been living, if I may say so, in partial purdah, I have had ample opportunity to look over the events of the twenty-six years of service, which I have done in this State of Mysore. When I came here something over twenty-six years ago, I knew, of course, absolutely nothing about Indian conditions in general, or the conditions of Mysore in particular. But it was not more than a year after I arrived here, that I had made up my mind that it was my duty to devote the years which I should be spared for work in Mysore, to one main object. That main object was to be, as I saw it even in those days, to build up an organization manned by Mysoreans which would be of permanent and lasting benefit to the agriculture of this State. I think I have told you once before, perhaps many times, that I had spoken of this to that great friend of mine, the then Dewan Mr.T.Ananda Rao, shortly after he took charge of the administration of the State, that I should like to use my best efforts during all the years that I should serve here, to develop an organization which would be of permanent benefit to Mysore Agriculture. Now, in the history of a State, twenty-six years is an extremely short time and I had no ambition or no expectation of seeing in the period of twenty-six years a revolution in Mysore agriculture. What I hoped would be a skeleton at least of the different activities and organizations which would be of permanent benefit to Mysore agriculture. Now, in the history of a State, twenty-six years is an extremely short time and I had no ambition or no expectation of seeing in the period of twenty-six years a revolution in Mysore agriculture. What I hoped would be a skeleton at least of the different activities and organizations which taken together would make up a really up-to-date Agriculture Department. I thought that if I could see before my retirement that organization in being I should at least have justified to some extent the trust of the people of this State and its Government. I think I can say now quite definitely that organization is there, not in its entirety, but in the form of a skeleton. You have here in the Agricultural Department, the Veterinary Department – I should not forget it – which came under my charge some thirteen or fourteen years ago, the Serum Institute which was organized still later and the Amrit Mahal Department which is being gradually transformed into the Live-Stock Section of the Agricultural Department, a skeleton of almost all that which you should require for investigation and demonstration work for the advancement of Mysore agriculture.

When I came back to this State in the year 1928, some of these activities were either in their infancy or were not yet started. I would refer particularly to the Serum Institute which had just then been started and to the Live-Stock Section which existed hardly more than in name. The Coffee Station itself was but in its infancy then. It had to be thoroughly organized. Moreover, at that time the development of the great Krishnaraja Sagara Irrigation Scheme was still under consideration. During the last six years, I have been fortunate enough to have been associated with the development of all of these many and varied activities. A number of my friends have expressed regret that I should not have been able to spend some more years here to see some of the fruits of these numerous activities. Gentlemen, I too regret that is not to be the case, but after all, the organization is there,

the staff is there, and it is for you, the agriculturists in general and the staff in particular, to carry through the work to its fruition. Once more I wish to impress upon you that I have never had any expectation of seeing large developments brought to fruition in the short space of my life here. But if I can be remembered as having been associated with these activities I shall be happy. I consider myself extremely fortunate in having been for a longer period than any other one man in charge of all these activities connected with the Agricultural Department. This I consider an extraordinarily great stroke of fortune for me personally.

Now Gentlemen, I cannot talk long to-day. All I wish to say is that I go away from here with the kindest feelings to all those with whom I have been associated, with feelings of most profound loyalty to His Highness the Maharaja and the present Government of His Highness the Maharaja and with feelings of most profound gratitude to the many officers of the State, some of them already gone with whom I have been associated and under whom I have worked for the last twenty six years. I carry away with me very very cherished recollections and memories which will be with me wherever I am, as long as I live.

Now to the younger men who are here. I wish to assure you that as far as the Agricultural Department is concerned, I have a feeling of very great confidence in the officers that have been left behind to carry on this work. There is not one man alone but several who are quite capable of directing the activities of the Agricultural Department in the future along the lines which have been marked out and along better lines which may hereafter be developed. I feel quite certain that the Agricultural Department in the future will be as successful, as useful as, and even more useful, than it has been during the past. The idea, if it is in your minds at all, that an organization is dependent upon the existence of one man, is an absolutely false idea. You must realize that perfectly well. It would be a sad thing indeed if the fact that one man disappears either through natural efflux of time or any unfortunate cause, it should lead to cessation of activities. No, it is not so. The work must go on irrespective of him. I have also the satisfaction of knowing that in regard to the development of this Department foundations have been laid upon which I am perfectly certain a structure, a worthy structure, will be raised which will be of great benefit to the agriculture of this State as a whole. Under these circumstances, Gentlemen, I think I can leave with thoughts of pleasure in my heart mingled with thoughts of regret that I shall not be present here to see some of the developments of the activities with which I have been so closely associated. I am perfectly certain, however, that I have friends here who will keep me informed of all the developments and I wish to assure them that I shall be only too delighted to hear from every one who cares to write to me wherever I shall be – I do not know where my future home is going to be, but presumably it will be Canada. I shall be delighted to hear of all your successes and I am sure they will be many.

I thank you all for your kindness this afternoon and I hope you will excuse me for not enlarging my speech because I feel extremely tired.

Hebbal Agricultural School

A delightful function was held at the Hebbal Government Agricultural Farm, situated about 6 miles from Bangalore, on the evening of the 15th March 1934, when Mr.S.P.Rajagopalachari, Second Member of Council, performed the pleasant ceremony of presenting diplomas to the successful students of the Agricultural School.

After tea the proceedings opened with invocation. Dr.V.K.Badami, the Principal of the Agricultural School, then presented the annual report.

President, Ladies and Gentlemen,

It gives me great pleasure to welcome you here and to offer you our heartfelt thanks on behalf of the staff and students for your consenting to preside on this occasion and presenting the Diplomas and Prizes to the successful students.

Owing to several unavoidable circumstances we were not able to conduct the usual festivities connected with the School Day and we regret very much that this time it is mainly a business function. When the periods of depression and strain are over, we fondly hope to revive the "Gala Week". Farmers as we are, we always complain against everything in the world but we do our duty and always hope for something better to turn up.

The retirement and departure of Dr. Leslie C. Coleman from Mysore has been a very serious loss to the School. This institution was started in 1912 by Dr. Coleman with the splendid support given him by the late Mr.H.V. Nanjundaiah, the then Member of Council. Since then Dr. Coleman was the ex-officio Principal of the School till 1931. Under his fostering care the School gradually developed. From a two years' certificate course the period of instruction was extended to three years and in 1920 government graciously consented to award the Diploma of L. Ag. to the successful students. Practically the whole of the district staff and a number of other important posts are now composed of the students of this institution. The general agricultural development in the State and especially the successful manner in which the Irwin Canal tract has been developed bear testimony to the capacity and technical training of the students who have gone out of this institution. In my last year's report I pleaded for the conversion of this School into a College. Dr. Coleman was also keen on this development, for he fully believed in attracting the best of the local talent to agriculture. In his retirement we have lost a powerful supporter. We are very grateful to him for all that he has done to this School and we, the staff and students, wish him a safe journey home, a speedy recovery from his illness and a long, happy and prosperous retired life in his home country. The true homage we can pay him lies in the direction of the development of this school into an institution worthy of the name of Mysore and help it to occupy a useful position in our national life. For this development we now earnestly look forward to the guidance and support of the present Director and the Government.

I have taken more time than I intended to take. But the immediate needs of the School and the distress of our unemployed students compelled me to refer to a few points that require the sympathetic consideration of the Director and the Government.

To the students who are receiving their Diplomas and prizes, I wish all success, happiness and prosperity in their life. The present dark clouds will soon vanish if you only have courage, faith in God and faith in yourselves. I am sure that you will ever bear in mind the fact that the School will be judged by the manner in which you conduct yourselves in life. I am confident that you will always try to add fresh honour and glory to your *alma-mater*.

I once again thank you, Sir, for the kindness you have shown us by being present here to-day. Under your lead and with your support we hope to give a better record of progress during the coming year.

Director's Speech

Mr. Yegnanarayana Iyer, Director of Agriculture, after welcoming those present, paid a warm tribute to Dr. Coleman.

He said: "I was associated with Dr. Coleman from the day on which he joined the Department to the day of his retirement. A man of brilliant scientific attainments he kept his mind fully stocked with the most up-to-date knowledge by his extensive reading and rapid assimilation. Opportunities for the expending of his knowledge and experience in many lines of agricultural work came to him thick and fast, both in India and abroad. Activities of the Department kept continually increasing in many directions and a number of institutions, Sericulture, Veterinary Science, Serum Institute and Live-stock to mention only a few, were being absorbed into the Department, not the least important though the most recent activity being the Mysore Sugar Industry. Though eminently a man of science, he never forgot that he was the Head of the Department of Agriculture as well, the success of which can be measured only by the extent to which improved agricultural practices are popularized amongst the cultivating classes and ryots and planters practically benefited. To this end he bent all the scientific research of the Department and also saw to it most carefully that practice never outran its scientific basis. The judgment and precision with which he drove this pair Science and Practice, in double harness was truly remarkable. Add to this his long service, almost unique, of a quarter of a century. he was thus able to build up and hand down to us a most splendid reputation for the Department which I value as a priceless legacy. Truly can I say of such a man *Si Monumentum Requirit Circumspice*. Let us pray that God may grant him and his family long life, health and happiness.

Now, I shall make a brief reference to one or two points in the Principal's report. The first one is the question of opening of an Agricultural College in the State which he has urged and has been urging with considerable force and vigour. Let me say at the outset that nobody will be more pleased than I if the conditions in the state should warrant the opening of such a college. For one thing, the Department will be securing trained men of a much higher caliber who may in time be trusted to hold responsible positions. This matter of an Agricultural College is no new one. It is many many years old, but if I may use an Irishism, this unborn institution has been the victim of accidents. Years and years ago, Dr. Coleman drew up a modest proposal making full use of the higher staff of the Department and the equipment on the Hebbal Farm. There was every chance of its passing through, but it did not do so. The scene changed when Mysore was suggested as the centre and I remember inspecting several sites and showing them over to late Mr. H.V. Nanjundiah. The proposal then got caught up in the wheels of the University and if I am not mistaken, the University showed its preference for a Medical Faculty instead. It came up in a somewhat attenuated form on more than one occasion in the succeeding years, but somehow it dropped out of sight and nobody troubled to look for it. As Dr. Coleman said on this same subject last year, it is all a question of finance and such funds as he could get he was expending on what he considered to be more fruitful lines of work. I do not know if conditions have changed since he spoke but should the opportunity arise, I shall not neglect it. I may also add that this is not a matter entirely for the Department, for the University is concerned in it, unless we do not want to keep in line with other parts of India and try to plough a lonely furrow.

The next point is the question of unemployment of the passed students of the School, which is assuming somewhat serious proportions and is bound to become worse. In this matter you have the sympathy of everybody. In a recent conversation with the Dewan Sahib (I may say without any breach of confidence) he showed his great concern in the matter and I do not think you can have a more

powerful support. I shall do all I can to try to expand the staff in the Districts, if not in a big number at one time, at least in twos and threes, and I would take this opportunity to canvass with all the earnestness I can for the sympathy and support of our worthy President in this matter. But, when all is said and done this can afford only very meager relief. I think, you, students, ought to completely change your attitude and look at matters under the altered conditions and adjust your action accordingly. For one thing you must be prepared to seed service on private estates and, for the purpose, it is of the utmost importance that you improve very materially indeed your practical knowledge so that you may be able to satisfy your employers. I have in mind the idea of extension of the present course, not as an integral part of the curriculum, but open to such as many be willing to avail themselves of the opportunity. Work on the coffee estates, sugarcane farms, fruit farms, dairy farms and so on, will constitute the course of training and one may select whichever course one likes. But this is only a rough idea which I would like to develop and I hope that it might lead to material larger relief to the benefit of both the students and estate owners. I cannot refrain in this connection from expressing my disapproval of the action of some at least of the men who refuse to take advantage of the opportunities in the Education Department. If this attitude continues, I do not know what the consequences will be.

We are bound to furnish the necessary staff in a scheme for which we ourselves are largely responsible and if we fail to do so, it may react rather unfavourably on us to say the least of it.

As regards the idea of parceling out sugarcane lands in Mandya as a colony for agricultural students, the idea has my full sympathy, although the word 'Colony' is not one likely to kindle enthusiasm just at present. With the sympathy of the Sugar Company and of your good self, Sir, I think it may be possible to do something in this line".

Press Report of Chairman's Remarks

After awarding Diplomas and prizes, Mr. S.P. Rajagopalachari, in a short speech, congratulated the Principal and the Staff of the Hebbal Agricultural School on their excellent work. He said that the thought uppermost in his mind that day was the absence of Dr. Coleman from their midst and he need not add to what had already been said of Dr. Coleman and his great work. He would associate himself entirely with the remarks made by Dr. Badami, the Principal, and Mr. Yegnanarayana Iyer, the Director of Agriculture, regarding Dr. Coleman. He knew Dr. Coleman from the time he entered the State Service. Dr. Coleman always referred to the development of the Agricultural School into a College.

Mr. Rajagopalachari next referred to the various occasions when attempts had been made to raise the status of the School to that of a college and said that for some reason or other they did not materialize.

Continuing the speaker observed that the importance of the School could not be over-stated so far as the State was concerned. It was the nucleus from which higher instruction of the college type must be developed. It was from this point of view the Government had always considered the claims of the institution to be converted into a college, but unfortunately for some reason or other the School had remained severely unchanged. Open invitations had been made to him (speaker) to help this Institution. Personally his sympathies were all with the School.

Mr. S.P. Rajagopalachari then referred to the two specific requests made by Dr. Badami in his report, viz., the question of raising the School to the level of a college, and the question of providing lands on Government farms to those qualifying at the school.

The former, he said, was impossible until the State finances improved. As to the second he felt that there was not sufficient Government lands just then available. The area of the Government lands was going to be reduced the Government wanted to give the ryots more opportunities in the Irwin Canal area where it was suggested land should be given to the agricultural diplomats. But if some more practical schemes were sent up, without their involving much financial commitments they would be considered. It might be possible for him to see that they were not summarily vetoed.

Proceeding, Mr. Rajagopalachari complimented the Principal and his staff on the excellent work that they were doing though under many handicaps and limitations. he said that the reputation of the School stood very high, when compared to the other sister institutions in India. All students from Hebbal School had been found to be fit for all kinds of agricultural work and they had been found to be quite capable of adapting themselves to any circumstances and needs arising out of the peculiar conditions under which they were called upon to work and grapple with.

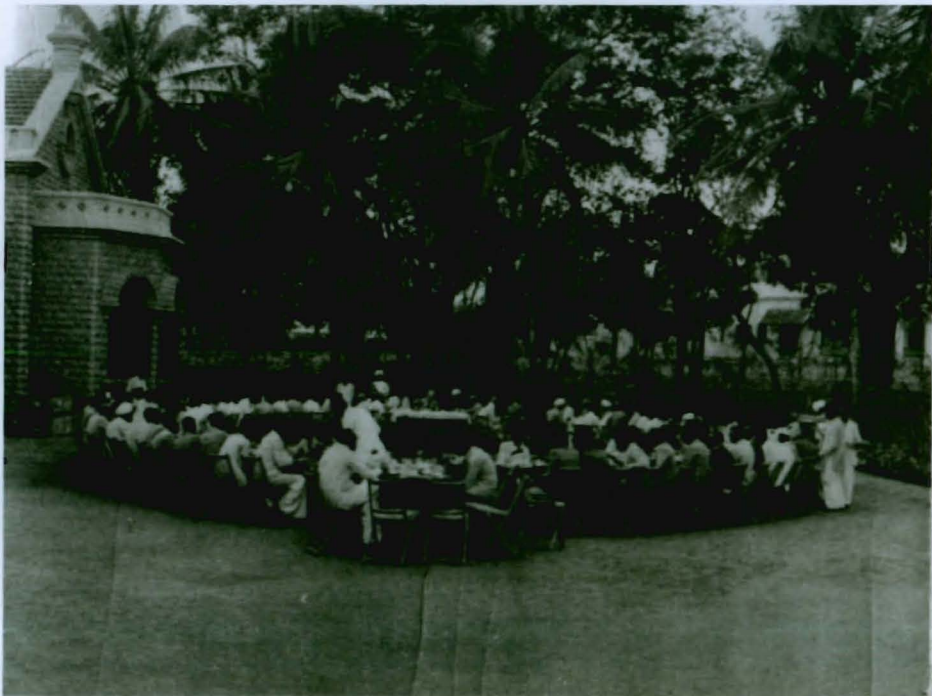
Finally, Mr. Rajagopalachari congratulated the students of the School, who had passed out this year, and expressed great pleasure at his being called upon to distribute Diplomas. He wished them good prospects and all success in future.

Appreciation









Dr. Leslie C. Coleman, M.A., Ph.D., C.I.E.

(An Appreciation)

The news of the retirement of Dr. Coleman from the service of the Mysore Government will be received with widespread regret, not only within the state which he served for so many years, but along all those interested in agricultural development throughout Southern India. It is not often in India that a public servant passes the whole of his working life in such close association with one department that the mention of the department immediately recalls the man, and in this respect, Dr. Coleman and the Mysore Department of Agriculture are practically unique. When that association has been so productive of results for the benefit of South Indian agriculture, its end cannot but be a matter of public regret and occasion for some appreciation of the personality whose labours were primarily responsible for it.

Dr. Coleman first came to India as Mycologist and Entomologist to the Government of Mysore in 1908 after a distinguished university career in Toronto and Berlin. At the time the Agricultural service of the State consisted of a Chief Agricultural Chemist, Dr. Lehmann and five assistant chemists, two of whom were seconded for duty in the Geological Department. Dr. Coleman's appointment was the first step in broadening the basis of that service to include the study of diseases and pests of the crops grown in the State. Shortly after his arrival, Dr. Lehmann retired from service and to Dr. Coleman fell the task of reorganizing the department on a broad basis with the ideal of a comprehensive agricultural service for the benefit of the primary industry of the State. The history of the department since that date has been one of steady development towards the realization of the ideal. He leaves the State with a lasting memorial in the form of an efficient modern agricultural service whose members have been imbued with the ideal of scientific method and public service which he had constantly kept in view.

The tasks facing Dr. Coleman in the early stages of his career in Mysore were not only those of carrying out investigations on the diseases of economic crops and of beginning the organization of an agricultural department, but also of proving that scientific advice was of value and worth paying for. In those days the scientific advisor was regarded as even more of a luxury than he is to-day and it was necessary to show both administrators and the public that an agricultural department was a profitable investment. In this, as in other tasks, he was completely successful. His work on the Koleroga of Arecanut and its control must be remembered, not only as a brilliant investigation of an important plant disease but as a striking and convincing proof of the commercial value of scientific investigation and advice.

This research was followed by others, equally successful if less spectacular, and even when the results were not of immediate practical value, yet they provided notable additions to our knowledge and supplied the basis for later developments. Dr. Coleman's pre-occupation in recent years with problems of agricultural development and administration has tended somewhat to overshadow the importance of his work as a plant pathologist, but it is only necessary to recall the studies of the transmission of Spike Disease of Sandal, the true nature of the fungus of Coffee Black Rot and the life history of the fungus of arecanut Koleroga to show the range of his purely scientific attainments.

It is, however, in the organization of the Agricultural Department in Mysore that his main monument lays. On the technical side, the varied investigations on chemical, mycological, botanical and entomological problems affecting crops in Mysore which have been carried out by the departmental staff owe their inception to his wide knowledge and keen appreciation of all the questions most urgently requiring study. No one who came in contact with him over technical problems could fail to

be impressed by his acquaintance with the details of each investigation going on in the different sections of his Department. Even when his time seemed more than fully occupied in other directions, he kept in touch with scientific developments and his conversation and correspondence overflowed with ideas and suggestions for the use of his assistants and collaborators.

In the extension and educational work of the Department he was equally active and the scientific trend of his mind was never allowed to obscure the fact that the main purpose of an agricultural department is the improvement of the state of the agriculturist. His own great skill with both speech and pen was constantly used to spread the results of investigations, to explain the purpose of the work of the Department and to gain the co-operation and goodwill of the agriculturist. That he succeeded in all these directions is visible throughout the State where the utilization of modern methods of soil fertilization, of crop disease control methods and of improved varieties of crops shown not only the results of successful research but also of successful propaganda.

The range and scope of these activities were made possible by his labours in building up a team of efficient officers to assist him and in this, one sees the force and influence of his personality. No one who has come into contact with the Department could fail to be impressed with his deep interest in and loyalty to his staff and his constant readiness to assist them with advice and encouragement. He was rewarded by the deep loyalty and efficient enthusiasm of those he chose to assist him and the cordial co-operation which existed in the Department is a tribute not only to his skill in selection but also to the attraction of his personality.

By the planting community, he will always be remembered for his services to the coffee industry, both by his own investigations and by the establishment of the Coffee Experiment Station, where he and his Department extended such cordial hospitality to the Scientific Officer of the U.P.A.S.I. His absence from the Annual General Meetings of the Association will leave a gap not readily filled: his speeches were always interesting and always helpful and his long and close relationship with planters, both in public and private, gave him an insight into the planters' point of view which was unique.

His long and distinguished public service in India has now come to an end but his influence and inspiration will continue among all those who were privileged to know him. It remains to wish him a complete recovery from the trying illness which necessitated his retirement and many years of happiness in his home country

Address presented to Dr. Leslie C. Coleman, M.A., Ph.D., Director of Agriculture in Mysore, and the President, The Mysore Agricultural and Experimental Union, by the Members of the Mysore Agricultural and Experimental Union, on 3rd July 1925

Dear Sir,

On behalf of the agriculturists of Mysore, we beg you to accept this inadequate expression of our regard for you and our grateful appreciation of your valuable services to our country. You came to us seventeen years ago when agricultural work was just being organized in the State, and you brought with you a brilliant intellect, undaunted courage and a radiant hope, which is the strong man's gift from God.

For seventeen years you have given us unstintingly of your best – the treasures of a rich and original mind, an energy which knew no fatigue, and sympathy which recognized no bound or barrier. Whether tighting the *Koloroga* in the dripping areca gardens in the Malnad, or investigating agricultural problems under the burning skies of the maidan, whether conversing with the *raiya*ts in their fields or urging the need for funds and equipment in the high places of the State, you have always been the guardian of the interests of the agriculturists and their honoured friend.

From modest beginnings, the Agricultural Department grew under your hands, branch by branch and section by section, under able workers fired with your own zeal till it became the pride of our State and the admiration of the rest of India. You might justly claim-what one less modest claimed of the French State – “the Agricultural Department, I am the Agricultural Department”, for you built it up and breathed into it your own spirit of service. The wealth you have won for the people of Mysore and the losses you have saved to them, though great, may yet be estimated; but the change of outlook you wrought and the inspiration of your high example dery valuation.

Of a man's work with men, it has been justly said that the greatest and most enduring portion is in the heart and the head; on this view, we may confidently say that your work has been well and nobly done and that the foundations of the agricultural edifice have been truly and justly laid. The secret of your power with us is your sympathy and that great gift born of sympathy and imagination – the power to put yourself in another's place and realize his point of view. We have known you in our villages trudging cheerfully across sodden fields in pouring rain; you have accepted of our humble hospitality and entered unreservedly into our lives and interests. Is it any wonder that we have learnt to look on you as one of ourselves?

We, the Mysore Agricultural and Experimental Union, have a manifold claim on you. Agriculturists ourselves, we also represent the general body of cultivators and focus their feelings-towards you. Ours, besides, is the proud privilege of being your personal friends and comrades. Under your leadership we have pioneered agricultural development by testing and demonstrating improved methods and serving as interpreters of the laboratory to the field; and it was our earnest hope that in this great work we would have the benefit of your vast experience and wise direction for many more years to come. But circumstances seem to have compelled you to leave us though, we hope, only for a temporary period.

Expressions of sorrow avail nothing and would only sadden our hearts and weaken us when we should be strong. We understand that you go for reasons of health and that it is quite necessary that you should go. We shall only say this – that if the affectionate regard of a whole people had the potency to heal, or their earnest wish the power to prevent your departure, you should never leave us and you should always be healthy and strong.

It is now our duty, with all the strength of our hearts, to wish you and Mrs. Coleman and your little daughter a prosperous voyage, a glad home-coming and every happiness that blesses life. And we wish, both for the sake of the agriculture of our country and for the regard we bear you, that you will soon come back to us restored in health and strength.

Address presented to Dr. Leslie C. Coleman, M.A., Ph.D., C.I.E., on His Visit to Mysore State, by the Members of the Mysore Agricultural and Experimental Union, on 9th January 1954

Dear Sir,

Be it our privilege to feel it extremely happy in having you amidst us to-day. We are erring on the side of inadequacy of expression when we tell you that the name of one, about whom the band of workers he trained and gathered around him, felt that he always gave unstintingly of his best, and about whom it could be chronicled that he was looked on as a personal friend by cultivators throughout the State and that his name will long be remembered in many a humble rural home, has always had a charm for us.

The fight against the *Koleroga* of Areca, the attack against the grasshopper of jola, providing an improved plough for the Mysore farmer, the breeding of ragi, sugarcane and other crops to increase the yield from our fields-are a few of the items that remind those interested in the agriculture of Mysore, of your great efforts, comprising a wide range of activities in founding and developing the Department of Agriculture in Mysore. Your opportunities have naturally and in truth, covered the subject from A to Z, and we like to think of this aspect of things especially at a time when it is being recognized more than ever, that the problems of the farmers must be handled as a whole in an integrated manner.

One who turns to the pages of the *Mysore Agricultural Journal* cannot miss your old refreshing article 'After Twenty Years' about your native country, Canada. And it has greatly interested us all that even after retiring from here you have continued to work in the institutions of your country. It has been a lesson to all who are being drawn to the cult of the head, heart, health and hands, and a guide to those who would believe that 'Work is Worship'. And more than that, Sir, it assures us that when we are listening to you we are listening to a voice of experience.

Your spontaneous and generous interest in this part of our country has already taken you through several of its districts in your present itinerary; and we are sure we will have the benefit of your review of the state of agriculture here.

Twenty years of history stands between the time when the Mysore Agricultural and Experimental Union had last had the advantage of your personal advice, and now. During this interval

the Union has had its ups and downs, though in the sum-total, we believe we are able to report some progress. Our membership is averaging about 3,000 with nearly 300 Life-Members; and the District and Taluk Committees are in the working. Field Days are being held in the villages and Student Farmers; Clubs are being sponsored. We are at the beginning of further planned work, when in view of the liaison afforded between the laboratory and the field, we are requesting Government for enhanced help and grants. Your advice at this juncture, Sir, will, we estimate, be of great inspiration to us.

You remember, Sir, you had expressed in a Message of yours to us, 'if you at all remember me, please think of me as a sort of *Sanyasi* of Science, who however retains all his human frailties'; and if that frailty of the loving heart be any of the stuff that has enabled you to give us this pleasant opportunity of meeting you, pray, permit us to be partners in that heritage.

Address presented to Dr. Leslie C. Coleman, M.A., Ph.D., C.I.E., Director of Agriculture (Retd.)
Mysore, by the Members of the Shimoga District Agricultural and Experimental Union, on 11th
December 1953.

Respected Sir,

We, the members of the Shimoga District Agricultural and Experimental Union, warmly welcome you today after arrival to our model State.

Your magnificent and memorable services to the State in general and to this District in particular are still remembered and cherished. During this period, you laid the foundation of an efficient system of productive and remunerative agriculture in all its aspects, and it is no exaggeration if we say that in the difficult times of food shortage that occurred during recent war period and its further intensity thereafter, if our State found better than any other State similarly situated, it was mostly due to the desirable fact of our Agriculture being on the lines envisaged and chalked out by you.

During your tenure of office you were responsible for starting several productive schemes, experiments, research, and a modern sugar industry, use of Bordeaux mixture against *Koleroga* in Areca, systematic soil survey, improved strains of Sugarcane and Paddy, Agricultural Education, Agricultural Land Colonisation and various other Departmental activities, were some among the outstanding achievements in the State. Realising that some sort of liaison is essential between the agriculturist on one hand and Department of Agriculture and scientific advancement on the other, you introduced the idea of Agricultural and Experimental Unions. This organization has been and is still growing steadily day by day. We have now in this District over 2,000 primary members, 400 Active members and 67 Life-members, There are Taluk branches functioning all over the District. The members of this Experimental Union are proud to state that the agriculturists of this District provide the State with an annual supply of over 6 lakhs pallas of paddy out of their surplus production to meet the food deficit of the other parts of the state.

Areca, the most important commercial crop of this District, derived great benefit from the intensive steps taken to protect the crop against the ravages of *Koleroga* which annually used to destroy a good portion of the crop. With the phenomenal increase in the money value of this crop during the war years, the direct benefit to the agriculturists of this District, it is needless to state, were indeed great. Among the other benefits resulting to this District from your fore-sighted agricultural policy may be cited the development of Anjanapur, Lakkavalli, Tunga and Bhadra Projects judicious use of chemical manures, mechanized farming, and better farming methods, have all improved the standard and increased agricultural production in the State. In this connection we wish to state that proposal to start a sugar factory in Shimoga Taluk is under the active consideration of Government. it would be a great advantage, if we could have the benefit of your valuable opinion and suggestions for the starting of this Project on sound lines. Your visit to this District, at this juncture, we consider it to be most fortunate, because it gives us an opportunity to get the benefit of your suggestions and guidance in the operation of various developmental activities which are afoot.

We consider it, Sir, that it is a signal record of your love and affection for the State, that too in your old age and fully twenty years after your retirement from service in the State, you have taken on yourself to visit and see your past activities. We thank you most heartily for providing this unique opportunity for us to meet you.

We pray God that He may give you many more years of active life to continue your useful and selfless services.

Address presented to Dr. Leslie C. Coleman, M.A., Ph.D., C.I.E., by the Members of the Mysore Agricultural and Experimental Union, Ramanagaram Taluk and Friends, on 13th February 1954

Sir,

We, the Farmers of Ramanagaram assembled here, wish to present our heartfelt gratitude to you in appreciation of your long and devoted service to our State for a period of over 25 years in the cause of the agriculturists.

It is at once pleasant and gratifying to feel your keen interest in that after a long period you should have spared your valuable time to visit the remotest parts of our State. And permit us to place on record our appreciation at your having come to our town.

We still remember and cherish the prizes received at your hands as Director of Agriculture for plots of H 22 Ragi and HM 320 Sugarcane grown by some of our leading ryots here.

In meeting you as members of the Agricultural and Experimental union, it is our duty to feel the privilege of belonging to an association founded by yourself and we have no doubt that on a number of points your advice will be of great value to us.

Though on an occasion like this a list of our requirements and needs may be out of place we are impelled by your love to us to place the same before you for kind consideration and recommendation.

1. Construction of a number of tanks and pick-ups in view of this taluk being surrounded by hillocks on all sides.
2. Further supply of electric power to the rural parts for agriculture and home industry.
3. A Breeding Station of Hallikar Cattle in the Taluk and an Agricultural Experimental Farm.
4. Improvement in rural transportation facilities to help agricultural marketing.
5. Establishment of an Agricultural Bank for the Taluk.

Our sincere thanks to you for having found time to be amidst us this evening.

Reproduced from the Mysore Agricultural Journal, 1954, Vol 30 (1): 52-59 (Note: the Secretary's Address given when Dr. Coleman was proceeding on long leave back to Canada in 1925, was reprinted in the Journal; the remaining addresses were given on his visit to various districts in 1953-54)

A FEW OF THE OUTSTANDING EVENTS WHICH HAVE MARKED THE PROGRESS OF AGRICULTURAL ENTOMOLOGY IN MYSORE By Dr. M. PUTTARUDRAIAH

Government Entomologist, Dept. of Agriculture, Mysore State

The object of the cultivator in tilling and manuring the soil is to reap a rich harvest. To do so, it is necessary that he should not only assist the crops to grow, but must also protect them from the attack of insects and diseases. Every crop is subject to the attack of a score of more depredators. Every part of the plant as well as the harvested fruits and seeds and even the products manufactured therefrom are subject to infection and to partial or complete destruction. Many insects attack a great and an extensive variety of crops. With the change of environment minor insects become more destructive and major pests. They injure the crops and stored products in a variety of ways: - by chewing the foliage, stem, fruit; by sucking the sap of the plant, by boring into stems, fruits, and roots; by carrying organisms of plant diseases and in many other ways.

Several instances of insect havoc of major importance may be cited. Seeds sown are carried away by ants or affected by subterranean insects so that many a time necessity arises for resowing the fields. Cut worms are a serious menace to seedlings of kar ragi, pulses, cotton, tobacco, coffee and tea; soil grubs to paddy, jola, sugarcane, vegetables and fruit plants. Stem borers tunnel in paddy, ragi, jola, sugarcane and fruit plants. The grown up crop is attacked by grasshoppers, beetles and bugs of different kinds. In recent years paddy grasshoppers and jola stem borers and earhead pests have become serious pests in Shimoga, Chitaldrug and Mysore districts. Leptispa, a minor pest had assumed serious proportions in 1946 in the paddy areas of Malnad districts. Stored grains and pulses are damaged by a variety of insects. Thus the pests of field crops and stored products levy a heavy toll on the agricultural resources of man. The average estimated annual loss caused by insects only the country over, is ten per cent of each crop; it may be even more in some places for certain crops. The division of Entomology of the Mysore State Department of Agriculture is concerned with insect problems ever since its inception. The task of the Entomologist is very arduous. The insect problems are acute and difficult. He has been struggling hard against insects for the good of the cultivator. In formulating control measures against insect pests, the entomologist has got to study the biology and ecology of the pest to find out the vulnerable stage; and consider the economics of the control measures, condition of crops, possibility or otherwise of the control measures. Before the results of his research are taken to the cultivator, he must test them in the laboratory and in the fields under varying ecological conditions, to find out the efficacy of the measures. With these difficulties it is not easy for him to hit upon easy and effective measures.

Even so, there have been many major achievements to the credit of the Division of Entomology. Several of the control measures are original and recommended for the first time by this Division. As early as 1902, the then Agricultural Chemist, Dr. A. Lehmann, realized the importance of insect pests and recommended the use of Paris Green against caterpillar pests, importing it for the first time in India, into Mysore.

The Division of Entomology was started in 1908 with Dr. L.C. Coleman as the first State Entomologist to conduct intensive research and devise suitable control measures against many crop pests.

Reproduced from the Mysore Journal of Agriculture, 1954, Vol. 30: 70-71.

Dr. Puttarudraiah in the article further goes on to outline the various management practices developed for specific insect pests of different crops in the erstwhile Mysore State. Most of these were the products of love of labour of Dr. L.C. Coleman and his devoted team.

EDITORIAL

Dr. L.C. Coleman's Visit

An event of great importance and happiness to the Mysore farmers and the Department of Agriculture was the revisit to the State of Dr. Leslie C. Coleman after a lapse of nearly 20 years. He arrived from Canada by air on 19-11-1953 at the Hindusthan Airport and was welcomed by a large body of his friends, co-workers and admirers including Sir M.N. Krishna Rao, all the ex-Directors of Agriculture of the State except one, the present and past heads of scientific sections, the Vice-President and other office-bearers of the M.A. & E. Union.

Dr. Coleman was the guest of the Government of Mysore throughout his stay in the State. After a series of discussions with Department officers and others he set out on an intensive tour of the State including Bellary, to study for himself how agriculture had progressed during the last two decades since he left Mysore in 1934 after a strenuous period of 28 years of hard work and service, first as Mycologist and Entomologist and later as the first Director of Agriculture in the State.

To a large body of raiyats of Mysore – particularly in the malnad, the Agricultural Department is more affectionately known as Coleman's Department. It was therefore no surprise that wherever he went he was greeted and received with warmth, affection and gratitude. He mixed freely with the farmers in their homes and fields, partook cheerfully of whatever frugal repast was offered to him, and made enquiries about their occupation, their health and well-being. He toured over 60 taluks and made detailed studies of the activities of the several Development Departments.

At the request of the Government, he has, it is learnt, submitted a 70-page report of his findings, suggestions and recommendations.

He left for Bombay en route to Canada on 23rd March 1954.

Dr. Coleman is 76 but is still at work. After leaving Mysore in 1934 he became Professor of Cytogenetics in the University of Toronto. After retirement at the age of 70, he has been working on problems of plant cancer under the auspices of the National Cancer Institute of Canada of which he is still a Fellow. He took special leave of 4 months to re-visit his 'second homeland' of Mysore (in his own words) and by the time this appears in print he will have been back at work.

Dr. Coleman has lost none of his vigour – either physical or mental. He still gets up at 4 am, walks 10 miles at a stretch as of yore and puts in 14 hours of work a day. He has lost none of his charm, drive and perspicuity. He has little use for microphones even when addressing huge audience as his stentorian voices can carry his words to the last bench or row.

It was indeed an heartening and refreshing experience to all those who saw Dr. Coleman during his recent visit. He still hopes to visit us again when he is 85. May he live long to fulfil his and our ambition.

It is proposed to bring out a special number of this Journal in September to record the life and work of Dr. L.C. Coleman.

Indian Coffee

Monthly Bulletin OF The Indian Coffee Board

Vol XVII.

NOVEMBER 1953

No.11

News & Notes

Dr. Leslie C. Coleman, C.I.E., the eminent administrator – scientist, is now in Bangalore on holiday. We take this opportunity to extend him a loving welcome to this place of his old memories which he is re-visiting after an absence of twenty years.

The coffee industry has special reason to remember him with gratitude. Many and varied as were his contributions to agricultural industry in general as Director of Agriculture in Mysore during a long and memorable period of twenty-two years (1912 to 1934) his contribution to coffee research was of outstanding importance and distinction. It was he who fathered and nurtured the Coffee Research Station in Balehonnur. It was established as far back as 1925 when few other coffee growing countries had a comparable institution. Indian coffee research owes its present place in world coffee research chiefly to Dr. Coleman for the fostering care and devotion he gave to it in those early years.

It is a happy coincidence that he is revisiting us at a time when the original coffee research programme set by him for a period of 25 years has run its full period, and it is hoped that he will give us the benefit of his rich experience and advice for furtherance of coffee research.

Dr. LESLIE C. COLEMAN
June 16, 1878 - Sept. 14, 1954

It has come as a great shock to learn that Dr. Coleman was killed in a motor accident on the 14th of this month. It is very hard to believe that such a vivacious, active man who in his recent visit to our state thumbed many half his age with his mental and physical vigour and exuberance, is no more. Dr. Coleman would have hated to die in a bed and it is significant that he did not die but was killed.

Born in his father's farm in Ontario on June 16, 1878, he spent his early life, up to the age of thirteen, mostly amid agricultural surroundings. After his country Primary School and village High School he, as an young man spent his holidays working on farms as a day labourer. From the age of 18 till the age of 22, he taught in Primary Schools. He entered Toronto University at 22 and received his Degree in 1904 standing first in first class honours and winning the Governor-General's Gold Medal, the highest award of the University for proficiency in Science and English. He continued in Biology in the same University during 1904-1905 and 1905-1906 in the laboratories of the U.S. Department of Agriculture.

Remembrance

He entered the University of Gottingen in the autumn of 1905 and graduated with the degree of Ph.D. and a citation *Magnecum laude*, the highest given in a German University. In 1906 he worked as a guest in the Imperial Biological Institute for Agriculture and Forestry in Berlin.

In January 1908, Dr. A. Lehmann selected him as Mycologist and Entomologist in Mysore and in the October of the same year he was placed in charge of what was then the Mysore Agricultural Chemist's Department including the Experimental Farm at Nebbal started four years earlier.

In 1913, he became the first Director of Agriculture in Mysore. In 1914-15 he reorganized the entire Department on modern lines with laboratories, research stations and a well-knit Extension Service, though he called it by the less spectacular but more descriptive term of Demonstration Section.

During 1918-19, he organized University Biological teaching for the Canadian Army in England (the Knaki University). Between 1925-27 when he was on long leave, he was Professor of Plant Pathology in the University of Toronto.

Except for these short periods, he was at the helm of the Mysore State Department of Agriculture from 1908 to 1934. This long period is as much a record as many of the great things he did for the improvement of Mysore agriculture. He was among the pioneers of agricultural education, agricultural research, plant protection and agricultural extension in

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India. When he retired in 1934 he had left behind him a very well organized Department with sound traditions of research and demonstration.

He was seventy in age when he retired for the second time but it looked as though he was only seventeen in spirit. Immediately thereafter he plunged himself in work as a Fellow of the National Cancer Institute of Canada and chose plant cancers for his research. In 1953, he took leave for 4 months to revisit Mysore – the scene of his early labours, grand achievements and second love. He toured the entire state from December to March, and wrote out his impressions in a bulky volume. He wanted to write his autobiography for which he was making preparations. He had even promised to send a few chapters to this Journal. It is a great tragedy that he was snatched away all of a sudden. He had expressed that he would revisit the State when he was 85. He would have done it but for this sad end.

His recent visit remains vivid and fresh in the minds of his colleagues and admirers who number in thousands. In his very first lecture after he landed in Bangalore in November last, he said that Canada was his first and the Kannada speaking Mysore, his second home. Second loves are generally strong and lasting. Dr. Coleman proved it by undertaking the costly air trip from Canada at his own cost and “dipping into his own capital”. He came here not for rest, not for reminiscence but to work, to put in 12 to 14 hours a day, every day in the week, including sometimes the Sabbath day, for all the four months of his tour. How many would spend their meager capital in their late seventies not for pleasure but for work? How many would risk a long air journey at his age? Why did he do this? Because he was always big-hearted; because he always did things in a big way. Because he just loved ardently Mysore and her people. How many of us are capable of this great love to our own dear Mysore.

Dr. Coleman is no more but his spirit which permeates and animates every room, every microscope, every work-bench and every member of the staff of the Department, lives on for ever. He has carved for himself a deep niche in the hearts of men and institutions of this State which memory cannot efface and age cannot wither. To us, in the Department of Agriculture and in the Agricultural and Experimental Union, he is immortal.

M.L.N. IYENGAR

16-9-1954

A letter since received by the Editor from Miss M.B. Coleman states that on the morning of 14th September her brother was driving his car to his Research Laboratory. He drove off the road on a curve in a pocket of dense fog and struck a cement projection. He was extricated from the car and taken to the hospital where he died within three hours of the accident. Dr. Coleman is survived by two sons, two daughters and two sisters. His first son and daughter were born in India

DR. L.C. COLEMAN, M.A., Ph.D.

AN APPRECIATION

By. Dr. M. Puttarudraiah*

AGRICULTURISTS in general and entomologists in particular in India were grieved to hear the sad news of the demise, of Dr. Leslie C. Coleman (May Peace be on his soul!) by an accident in his native country on 14th. September 1954. Dr. Coleman was one of the pioneers in the field of Agricultural Entomology in India. Having started his career as Entomologist and Mycologist to the Government of Mysore in 1908, he made many outstanding contributions on our major crop pests. He built up the Division of Entomology on a sound basis and for the first time, worked out the biology and control measures of serious pests like the paddy and *jola* grasshoppers, hairy caterpillars green bug on coffee and many other pests. A great collection of pests was built up and intensive research was undertaken. Many insects were described for the first time and many were named after him.

He has been immortalised more than once, as several insects named after him bear witness. An entire genus was erected as *Colemania* Bolivar with the species *C. sphenerioides* Bolivar as this serious pest of jowar called the Deccan Grasshopper was discovered and worked out in the northern districts of Mysore by him.

Apart from his contributions to the study of the paddy grasshopper, another new species of grasshopper found in paddy fields has been named after him as *Hieroceryx colemani* Bolivar.

His name has been a household word among coffee planters. He has saved their coffee industry from the ravages of not only *Koleroga* but also of green bug which again was worked out by him and so was named after him as *Coccus* (-*Lecanium*) *viridis colemani* Kannan.

Even in the early days of his entomological career, he realised the importance of the beneficial natural agency in keeping the pest below economic level. He noted many hymenopterous parasites on crop pests and as many as six of them have been named after him: *Aphidius colemani* Viereck, *Apanteles colemani* Viereck, *Anastatus colemani* Crawford, *Bruchobius* (*Sphaerakis*) *colemani* Crawford, *Tetrastichus colemani* Crawford and *Telenomus colemani* Crawford.

During 1921 and 1933, he tried to introduce the lantana *Agromyzid* flies from Hawaii for the biological control of the introduced weed *Lantana camara* which has become a serious 'scourge in this country .

His contribution, in other fields of agriculture have been many and in the field, of entomology his works on "The Rice Grasshopper", "The *Jola* or Deccan Grasshopper", "Hairy Caterpillar (*kamblihulas*) in Mysore", "Some Scale Insect Pests of Coffee in South India", "Ground Beetles Attacking Crops in Mysore", together with his "Notes on Sugarcane Cultivation in Java", "Report on the Coffee Berry-Borer in Java", and "Improvement of Coffee in the Dutch East Indies", etc., etc., have been outstanding.

In a small space, it is very difficult to express adequately the unforgettable contributions to the cause of the Mysore farmer and the small homage that a student of entomology can pay to the memory of the great scientist is to state that the foundation he laid in the Division of Entomology is secure and strong and the work that he did will sustain his successors to build up the fortress of teaching, research and plant protection that he aimed at. In fact, it is gratifying to state here that when he visited this country during 1953-54, he expressed his great satisfaction about this Division and hoped that he would come again after another interval to review the work here and note his satisfaction; but God willed it otherwise.

Dr. L. C. Coleman is a name which inspires all entomological workers and we in this Division hope to continue the work for the cause of cultivators he stood for.

*Head of the Division of Entomology, Mysore State Department of Agriculture.

Homage to Rachel Carson

or

What do coaches know about the players in the game of IPM?

A.R.V. Kumar and K. Chandrasekara

Department of Entomology, University of Agricultural Sciences, Bangalore - 560 065

"The more clearly we can focus our attention on the wonders and realities of the universe about us, the less taste we shall have for 'destruction.'"

- Rachel Carson, 1954.

The Saviour

During the late 19th century, 1874 to be precise, a German chemist named Othmar Zeidler synthesized a compound named Dichloro Diphenyl Trichloroethane. This chemical was to play a major role in



Paul Hermann
Müller

Agriculture during the 20th century. In the year 1939, a Swiss chemist, Paul Hermann Müller, discovered the biological activity of this chemical, popularly called DDT, against insects. Although chemicals were in use for insect pest management since the 1st century, DDT was different from all other chemicals. It was a contact insecticide that could knock down insects at an amazing pace. Further, the chemistry and method of use of DDT were well understood by many farmers, which became very helpful in its use for the chemical in several countries and by mid 1940's DDT had become the most wanted chemical for the human war against dreaded insects, that were ravaging his crops and killing him through spread of diseases. DDT helped fight the spread of malaria by mosquitoes and the equally dreaded typhus spread by lice. No wonder, he was rewarded with the most prestigious of the awards in scientific world, the Nobel Prize for Physiology and Medicine in 1948, for saving millions of lives. Thus the discovery of biological activity of DDT ushered in a new era in insect pest control and opened the flood gates of insecticidal market.

OTHER ARTICLES

As estimated, it was, a US \$ 32 billion industry by 2000. Müller strongly believed that the chemical is harmless to warm blooded animals in general and more so to human beings. These properties made a case for widespread use of DDT and other insecticides in the later years for fighting all kinds of insects whether needed or not. Insects, after all, are always believed to be of nuisance, if not anything else! One such example of uncalled for use of insecticides was the use of DDD (Dichloro Diphenyl Dichloroethane) a chemical derivative of the DDT, in Clear Lake, California.



Use of DDT
during WWII

The Boomerang

Residents around this large lake, roughly 70 sq. km, frequently complained of huge gnat populations that invaded their homes. These gnats, *Culiseta inornata* (Diptera: Culicidae), are relatives of mosquitoes, but with a difference. They never bite! They are primarily detritivorous and breed

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prolifically in any water body. The gnats get attracted to even faint light after dusk. As a result, it is probable that they were getting attracted to lights of residences around the lake. The availability of insecticides allowed lake managers to try out insecticides for managing the nuisance, the gnats. Some

time during 1949, Clear Lake waters were found loaded with DDD, a derivative of DDT that is much more potent than the precursor itself. The chemical, DDD, was applied at the rate of 1 in 70 million parts. The gnat problem was immediately solved! The residents were happy, as also the managers. But soon their happiness started withering and by 1953, the gnat problem surged back to its original level! This time the managers decided to finish off the gnats once and for all! They increased the dose by 50 per cent and applied it in 1954. But sooner than later, in 1956 to be precise, the gnat problem was back with a bang! Another go was planned and executed at the same dosage during 1957. How did the gnat numbers recoup from a disaster of insecticide treatment? The phenomenon is now widely recognized as "insecticide resistance". However, the knowledge of the phenomenon preceded the gnat problem that was formally documented, first, in the year 1948 itself - for DDT in the most common of all insects we know - the house fly!

The Silent Spring

Rachel Carson

Around the same time, many a number of birds around the lake area were falling dead for reasons unknown. The birds were dying at the highest frequency just about 2 months after the application of the insecticide. This must have something to do with the insecticide applied to lake and the investigators who pursued this line, were rewarded the most! Although, the insecticide was applied



Rachel Carson

only at the rate of 1 in 70 million parts, the birds were dying because their tissues contained as much as 1600mg per kg of fat magnified by 112,000 times. After all, the insecticide was applied to water, how did it creep into the aerial birds at such whopping rates? It was a clear case of missing the target! The insecticide was applied to quell insects, but was also picked up by the plankton (250 times), fish fed on these plankton (1000 times) and the birds fed on these fishes. The insecticide had pervaded the entire food chain, getting accumulated at higher rates at each of the links. Hunt and Bischoff, first discovered this inimical effect, during 1960, of DDD on the wild life and the phenomenon is now widely known as *biomagnification*. The consequence of this did not stop at the death of some birds. As the phenomenon was reverberating through the entire ecosystem, more birds were to loose out not because of very high doses of the chemical, but because the DDE, the

metabolite of DDD resembled a female hormone, carbonic anhydrase, which regulates the deposition of calcium in the egg shells. Sublethal concentrations of DDE were more than enough to result in thin-shelled and easily-broken eggs. Wide spread loss of bird populations of all kinds were consequently reported from various parts of USA and Europe during the 1950's, largely due to the profligate use of the insecticides in agricultural ecosystems. An estimated 453,000,000 kg of DDT in the atmosphere by 1968 only substantiates to this possibility.

This caused a great concern among the general public. One such concerned naturalist, from USA, Rachel Carson, took it up as an issue to make the public aware of the ill effects of such misuse of some of the most potent chemicals of use in Pest War. Her book, published in 1962, written amidst the pressures of coping with a fatal cancer disease, *Silent Spring*, whipped up the public fashion to

the hilt. She, having accomplished her heartfelt duty, of course, died of the dreaded disease in 1964 at a prime age of 56. The impact of the book was so strong, that it remained the best seller for over 89 weeks, demanded the Presidential interference to quell the abuse of insecticides. The book triggered off 'Environmentalism' movement all over the world. To this day "*Silent Spring*" remains the most rhetorical and potent metaphor for all evils committed by man against nature. It is only fitting that the Lady is recognized as one among the "TIME'S 100" most influential people of the 20th century. Carson also exemplifies what an ordinary person can achieve in life through commitment, concern and devotion despite the looming threat to life.

Towards a new concept : IPM

The warning of *Silent Spring* triggered entomologists around the world to ponder over these inimical impacts of the insecticides. Their efforts at mitigating this situation, to restrict the use of chemicals in insect pest management on crops around the world ended up in the proposition of a powerful concept in Economic Entomology, the Integrated Pest Management. The concept is perhaps best defined by one of its strongest proponents, Marcos Kogan, in 1998 : "*IPM is a decision support system for the selection and use of pest control tactics, singly or harmoniously coordinated into a management strategy, based on cost/benefit analyses that take into account the interests of and impacts on producers, society, and the environment*".

In IPM an agricultural field is viewed as an ecosystem containing pest populations that are influenced by many interacting natural forces. IPM makes use of several types of simultaneously or sequentially adaptable techniques to minimize damage caused by pests, including biological controls, cultural practices, genetic engineering, and judicious use of chemicals. Biological control can include introducing or enhancing populations of natural enemies such as parasites, predators and disease causing agents to keep the pest population levels below a certain economic threshold level. The use of natural substances to interfere with pest life cycles, such as the use of sex attractants to draw pests to traps, is another type of biological control. Cultural practices are farming techniques, such as planting patterns, that interfere with pest life cycles. Genetic engineering or conventional plant breeding can be used to develop pest-resistant crop varieties. Under this integrated approach, farmers are expected to use chemicals only when necessary, rather than as the first and primary line of attack. In IPM an insect is considered a pest when excessive amounts of a crop are lost. In fact, the *mantra* of IPM is to "Live and Let Live".

Further, Bajwa and Kogan, during 2000, analysed as many as 67 different definitions of the concept and found that nearly 60 per cent of the definitions stressed the economic viability as the primary criterion for pest management. However, more importantly, 40 per cent of the definitions stressed the environmental impact to be the concern of the pest management options. It is paradoxical that a concept born out of the womb of environmental concerns has relegated this very concern to the second place over-weighing the economic importance. Such are the ways of the world! It is important that any farmer who is adopting a strategy for managing the pests on his farm, need to be wary of the costs involved. His efforts in managing the pests should logically provide him the required benefits so that the cost incurred is offset to the advantage of the producer. After all, agriculture is a profession, where every one involved has to survive and economic concerns are thus justified. But these efforts at survival should not jeopardize his self interest, others and the environment at large in the long run. Insecticides are well known health and environmental hazards. Therefore, it is imperative that every farmer earnestly cares for this aspect while choosing the pest management options. Third most important aspect of the concept, as analysed by Bajwa and Kogan is the harmonious integration of a variety of technologies/options available for the management of any insect pest.

Insect pests can be potentially managed by using mechanical, physical, cultural, biological, genetic and chemical methods. Chemical methods, it is important to note, are to be the last options.

The concept was formally adopted first by the US Government during 1972 and later by several other countries. India towed the line in 1985. The Govt. of India, despite starting late, developed an excellent action plan that supported research into non-chemical methods of control, trained the trainers and the farmers, provided substantial subsidies to farmers for non-chemical methods of pest management. Therefore, it is anticipated that the farmers are weaning themselves away from insecticides.

IPM : The name of the Game

A pertinent question therefore is to know what are the ground realities? Forcing an analogy, we prefer to compare the Integrated Pest Management to a game of cricket. In cricket, players play their game, their game is moulded by coaches who draw up the game plan, manufacturers and groundsmen provide the necessary gears, monitored on the ground by the umpires and controlled by a set of rules developed by the ICC and other regulatory bodies. Most important, the game is played for the benefit of a large body of spectators. In pest management too, there are farmers who play the game, marketers provide the supplies, their game is moulded by the technologists and the rules are set by national bodies and international counsels, who are responsible for drafting the policies, government agencies are expected to monitor the game and ultimately we have the consumers in place of spectators, for whose benefit the game is played!

History of Indian cricket has demonstrated definite roles for each of these elements for the successful growth of cricket. A case in point is the 2003 world cup, where the performance of the Indian cricket team was greatly influenced by the spectator response back home! Similarly, IPM as a game, if it is not up to the mark, it is just that any of these elements can be at fault and it is not improbable that every one of these elements need improvement. But the question remains, are the Govt.'s efforts paying us back? And what is the role of the coaches?

What do Coaches Know about the Players?

A coach is expected to know the weaknesses and strengths of the player first, before moulding him to meet the demands of the game. In IPM it is the job of the University and the line Department technologists to assume this role and mould the farmers to meet the demands of the game of IPM. The Govt. of India has been making large scale efforts to train the farmers in understanding the intricacies of the Integrated Pest Management. Hence, it is anticipated that the level of understanding of the farming community in using pest control tactics should be reasonably high. Commensurate with this idea is the fact that over the last few years the pesticides, especially the insecticides, are being consumed to a much lesser extent than was the case earlier.

But, do the ground realities match these conditions. Recently we had an opportunity to explore the situation through series of interviews of various farmers in five different districts of the state. In all over 2,000 farmers were interviewed. To our surprise, it was discovered that most farmers exclusively use chemicals as the sole method of managing pests in different cropping systems. An important tenet in the use of any pest control option is ascertaining the need for enforcing the control strategy. This can only be done through proper and periodic assessment of the pest load. To our dismay, we observed that almost no farmer bothers about the pest situation before imposing a control strategy. As a result, it could be possible that many of the insecticidal applications are not really called for and

yet imposed! These needless applications of insecticides beat the essence of the concept of IPM, as they add to the cost of production and also increase the environmental hazards. Further to our dismay, most farmers did not know the names of chemicals they have used. Mixtures of insecticides were of common use, especially in vegetables, often 3-4 insecticides were being combined at the time of spraying. Insecticides were being used even on the day of harvest, which obviously lead to increased ingestion of insecticides, as many of them are likely to be consumed raw! It is important to note here that 65 per cent of the consumers in this country are farmers themselves! Therefore, all the more it is necessary that they be careful about the use of insecticides. But unfortunately that did not appear to be the case. Use of fungicides against insects and insecticides against fungal diseases were quite frequently noticed. Often the same chemical made by different companies was being used as "different" insecticide!

Worst was the way the information dissemination was taking place. Although, many radio and TV channels air a number of programmes related to agriculture, on aspects related to IPM, hardly 5 per cent of the farmers were getting information from these mass media. Print media, almost did not matter as a source of information to them. Much more appalling was the fact that technologists such as University scientists and the officers of the State Departments were not at all consulted on matters of pest management by most farmers. But on the other hand, nearly 85 per cent of the farmers were getting the advice only from the input suppliers.

These results overwhelmingly demonstrate the fate of the game of IPM in the state. In a training programme meant for farmers trained in IPM, and supposedly knowledgeable about preparation of the Neem Seed Kernel Extract, the participants took over ten minutes to identify the neem seed kernels! The incident clearly demonstrated the abysmal level of knowledge on IPM even among the farmers who have been repeatedly trained on aspects of IPM. This situation does not augur well for the long term benefits of the farming community and the country as a whole. Situation can become alarming, when pesticide usage is not carefully done! One such danger that is lurking to hit the farming community of Malnad is the usage of an insecticide called Chlorpyrifos. The chemical is being rampantly used for the management of arecanut white grubs. The recommendations of the University, aim at drastically reducing the insecticidal input for the management of this pest. Farmers have now resorted to using the insecticide, without bothering about ascertaining the pest load. While the University is vehemently suggesting the use of insecticides only at proper time and only once in a two year life cycle period of the insect, the farmers are using almost four times during the same time period. Another very effective method of managing the arecanut white grubs, the physical method of digging and removing the III instar larvae, is hardly adhered to. Rampant use might, over time, result in a situation where, the insect develops resistance against the insecticide and leads to ineffectiveness of the chemical. Our recent studies have provided evidence to the effect that the insect has already developed resistance to chlorpyrifos, at least in some localities. If that happens, there is virtually no alternative chemical to manage these insects, as there are hardly any options to replace the currently recommended soil insecticides in the country. This situation overwhelmingly demonstrates that 'coaches' are not the real coaches of the farmers – because the farmers are unwilling to listen to them! As a corollary, being technologists, whose job is to advise the farmers, we concede defeat and would like to admit that we do not know what the farmer does! But then, even though, the farmers still remained so insensitive to the insecticide use pattern, the question remains, how did the insecticide consumption reduce in the country? We are yet to get an answer to this question.

While that is one aspect of the story, what are the responsibilities of the producers? As we have already pointed out, 65 per cent of the consumers in this country are farmers. In a situation where players are also the spectators, the game should have been played more fervently. But, unfortunately, this does not seem to be the case with the game of IPM. The consequence of this failure of the game would have lasting impact on the environment. More so, if the ecosystem is fragile and sensitive to the pollutants such as insecticides. We pray that the farmers and the farming community be aware of this fact and restrain themselves from rampant use of insecticides in any pest management effort, lest we have a *SILENT SPRING* lurking in the not too distant future.

The Last Word : Rachel Carson, an ordinary person with an extraordinary love for nature provided the world with the phrase, *SILENT SPRING*, a phrase that spread the message of Nature Conservation, was born on May 27, 1907. The year, 2007 was her centenary year. We dedicate this article in her memory and hope the farmers of this country, as a mark of respect to this extraordinary lady, who was worried about the world around us, will restrain themselves from needless use of pesticides.

Note : The article was originally written focusing on the farmers of Malnad.

Replications with a difference

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In the aftermath of II world war, United States of America felt that the supremacy of being a superpower, in what ever connotation one can think of, stands on the pedestal of technological innovations erected on a sound scientific foundation. It was therefore, a necessity that the scientific community of a high standard be established in the country. A pertinent question was to identify the parameters or a set of traits that are preferably unique to scientists themselves in the first place and if some such possibility is remote, at least, it was important to note what makes a scientist different from ordinary mortals. Anne Simpson, a psychologist and wife of a renowned paleontologist and an evolutionist, George Gaylord Simpson, took up the challenge of identifying the parameters that set apart a scientist from an ordinary man on the street. While she successfully identified a few traits that set apart men of science from the lay people, she did recognize a few additional parameters that were widely prevalent among the scientists she interviewed for the purpose. One such feature was that many of the scientists were great lovers of music and some even regularly played piano, violin, etc. If my memory has not failed me, at least I know of one great limnologist and ecologist, G.E. Hutchinson, known for the Hutchinson ratio, to be a reasonably good exponent of violin. Practicing music as a hobby is definitely different from being a quality exponent of the art. To be a man of high art, calls for sacrifices and investment in time. By and large many scientists are short of time for pursuing their own field of interest and as such I do not think there are scientists who are also great exponents of music. However, there are many people known to have excelled in more than one field of human endeavour. Dorothy Sayers, for example, chucking off her detective stories resorted later in her life to theological writings, almost to the extent that Archbishop of Canterbury offered her a Lambeth doctorate in divinity. Isaac Newton has spent time analyzing prophetic scriptures. Are there entomologists in a similar league? Did their avocations affect the growth of the science of insects? There are many such questions one would find interesting to ask. Although, there could be many entomologists who have contributed to other fields of human endeavor, let us consider three of them.

Scientific promiscuity

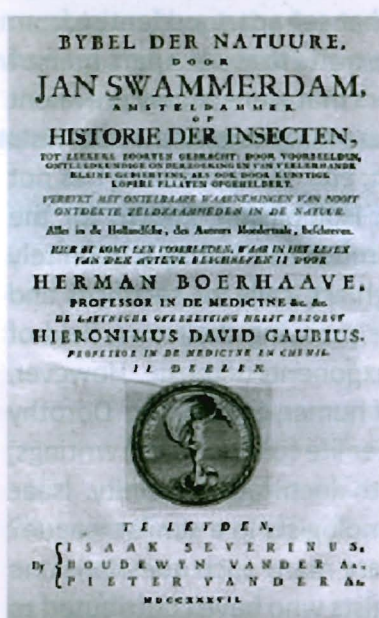
Swammerdam

"The body of a beast deserves as great admiration as the human body, if we consider both in their kind and nature"- Swammerdam

Jan Swammerdam (1637-1680) was a Dutch biologist. To his credit he has the distinction of being the first to discover the blood cells, valves in the blood vessels, blood pressure as the reason for erection of penis, and was also the first to greatly map the anatomy of the human female reproductive tract. But not to stop at that, his passion was insects that perhaps cost him a fortune in missing his father's enormous wealth. Inspired by Italian doctor, Marcello Malpighi's *"De Bombyce"* (1669), and egged on by his friend, a French diplomat, Melchisedec Thévenot, Swammerdam, set a phenomenal goal for his life; to develop a general classification of insects by discovering the "rules and theorems" of

morphogenesis, a task perhaps that remains ambitious and daunting to this day. He was the first to demonstrate that it is the same insect that passes through the four – egg, larva, pupa and the adult – stages of the metamorphosis¹. He was also perhaps the first to intensively use a microscope to study the anatomy of insects. Following his early work, "*Historia Insectorum Generalis*" published during 1669, his most cherished compilation of a life time work on the anatomy, physiology and philosophy of biology, "*The Bible of Nature*", could only be published sixty years after his death. The publication was made possible by his friend, Thevenot's initial efforts that helped compile what was available. On learning about the existence of the manuscript, the great Dutch physician Herman Boerhaave (1668-1738), bought it from a swindler, and even on his death bed saw to it that the "*The Bible of Nature*" got published in 1737 in its original Dutch and later in 1738 a translation of the work in Latin.

Jan Swammerdam's bust sculpted by Dirk Dik Stins in 1944 to quell the wrong but popular image of him [* File contains invalid data | In-line.JPG *] Swammerdam's short life had a profound effect on the



scientific thinking in general and biology in particular of the 17th century Europe. He surpassed Redi in demonstrating that the gall wasps are a product of the eggs laid by the mother wasp and not a product of spontaneous generation as was accepted by the latter, despite his experiments with flies. Clearly, a foundation was laid not just for the unification of the theory of "preformationism" but also for scientifically establishing "fixity of species". The latter part was the required straw man, only to be shot down with the theory of Evolution. Much more than his contribution to medicine, Swammerdam is remembered for his two important assertions in biology, that there is nothing like spontaneous generation of organisms and that metamorphosis is a manifestation of the different forms of a single organism. At the time, these two positions were closely linked; thus Swammerdam argued in '*The Bible of Nature*' that his work "*eradicates entirely the false notion of metamorphosis or change of one creature into another, that universal chimera of erring opinions, and totally de-*

stroys and subverts the monstrous opinion of a fortuitous generation of creatures."

Insects, for Swammerdam remained the primary passion that persisted unto his last days thus befittingly, despite his enormous contribution to other fields of biology and particularly to medicine, he is recognized as the greatest entomologist of the 17th century. He was aware of this fact, particularly in advocating an "experimental philosophy" in science and proudly proclaimed his work to be the decisive advancement, for over 2000 years, on the Aristotelian views of science.



Jan Swammerdam's bust sculpted by Dirk Dik Stins in 1944 to

However, Swammerdam is known to have devoted his later part of life to evangelical Christianity. It was 1673 to 1676 when he fell under the influence of the itinerant French mystic, Antoinette Bourignon (1616-1680). Bourignon argued that Adam was hermaphrodite, and insisted that all her followers give up their worldly goods and preoccupations to follow her and worship Christ. Swammerdam is supposed to have excelled in his avocation, evangelization, with equal aplomb as his entomology.

He died young. During the 43 years of his life, his achievements in various fields of biology, medicine, and entomology in particular, were by far the most productive first steps that paved the way for development of these sciences. He was audacious, in setting goals and rhetoric in his proclamations of achievements. Time and again the history of mankind has asserted them to be the very traits of the personalities that have changed the course of history. Swammerdam changed the course of science of biology. But for the influence of Bourignon, one may wonder, his contribution to this field of science would have perhaps added a few more feathers to his cap, if only he were to spend those three years exclusively on insects and more insects and just not the May flies, reflected in his "*Ephemeris Vita*". Could it be that the science suffered due to his avocation with evangelization? Three years at a prime age of intellectual advancement for a man who died young must be an unfathomable loss to science.

Kinsey

"We are the recorders and reporters of facts - not the judges of the behaviors we describe." - Kinsey on his reports



Kinsey with his booty of cynipid

Kinsey with his booty of cynipid galls.

Alfred Charles Kinsey (1894-1956) was instrumental in enormously disturbing the puritans and the Christian thinkers while being credited to have been responsible for the present day sexually liberated West in particular and the world at large. First of his works, '*Sexual Behavior in the Human Male*' published in 1948 made him a house hold name and the best seller was sold millions of copies. His perseverance with this chosen field led him to further publish his next report "*Sexual Behavior in the Human Female*" in 1953. The two reports together popularly called the 'Kinsey reports' changed the bed room psychology of the Americans for ever and have remained the all time best selling scientific publications to this day.

The reports went much beyond; they successfully created a largesse of controversies that continue to rage decades after his death. Enormous social change that was brought about by the reports, has according to some, was instrumental in effecting a deplorable family value and system. *Kinsey, Sex and Fraud: The Indoctrination of a People* - by Dr. Judith Reisman and Edward W. Eichel published as recently as 1990 even led the issue to the US Senate. Tagged along were the approach to science and the tools of research used for the generation of the reports. The committee set up to look into these short comings, led by Cochran, the renowned statistician, by and large felt the first report to be on reasonably sound scientific methods. On the contrary, these deterrents notwithstanding, Kinsey to this day remains highly socially influential through his reports and lecturing. He was successful in attracting thousands of audience to listen to him. Many scientists viewed the reports, with all their scientific short comings, as an iconic example of 'academic freedom' and vociferously defended Kinsey and the reports.

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Kinsey's interest towards the study of human sexual behaviour was largely due to his own appreciation of the fact that most, if not all, information that was being delivered at courses on marriage were ill founded on scientific counts and there was "*widespread ignorance of sexual structure and physiology*". He became increasingly interested in sexual behaviour of the humans, and on providing an opportunity, Kinsey chose to pursue his new found love, sexology, and established the Institute for Research in Sex, Gender and Reproduction at Indiana University, now called the Kinsey Institute for Research in Sex, Gender, and Reproduction. They were the days of myths that most people were obedient to a traditional set of sexual rules and those who were not were relatively rare and defective in morals or willpower. Kinsey's works, in plain words, demonstrated the actual practices prevalent among the US public to be in fundamental variance with the widely held - national - myth. His reports were produced at a time when US was besieged with the communist phobia. While Kinsey's male report attracted lot of attention and a warm reception, his female report was a disaster and many an American was unwilling to accept the facts! Kinsey, was thought to be working for eroding the American morals that may weaken the US against the communists. Although the allegations were false, the funding agency, Rockefeller Foundation, felt the Kinsey doesn't deserve to be supported. The funds dried up. His further publications were thwarted and perhaps contributed for his early demise in 1956.

Generally regarded as the father of sexology, Kinsey was basically a biologist, an Entomologist at it. His initial passion was the taxonomy and biology of Cynipidae, the gall wasps. His interest in the study of plants and animals and his child hood love of nature in general, defying his parents' wishes brought him to Entomology. Working under the tutelage of the renowned Myrmecologist, William Morton Wheeler, at Harvard, Kinsey embarked on his pursuit of cynipids. His impressive publications on the gall wasps of the family Cynipidae and general works on Biology, : "*New Species and Synonymy of American Cynipidae*" (1920), "*Life Histories of American Cynipidae*," (1920); "*Phylogeny of Cynipid Genera and Biological Characteristics*"; (1920), *An Introduction to Biology* (1926), *The Gall Wasp Genus Cynips: A Study in the Origin of Species* (1930), *New Introduction to Biology* (1933, revised 1938); and *The Origin of Higher Categories in Cynips* (1935) were sufficient enough to earn him the title of a star scientist of the USA by the American Men of Science, as early as 1937 itself.

Despite his celebrity status and the enormous popularity that came much later with the study of Human Sexual Behaviour, his work on cynipids earned him laurels and his industrious nature in documenting the variations was highly appreciated by the peers. As a testimony to his intense labour of love with the cynipids, as many as 5 million of the 15 million specimens available at the Harvard Museum were his own collections of the gall wasps! Therefore, it is but natural to anticipate that Kinsey's intellect and the industry, if only were to be spent on pursuing insects, Entomology would

have gained more. His new avocation, study of sexology, prevented this benefit to a field that was both his first love and trained him as a scientist.

Nabokov

"Try Bunny, it is the noblest sport in the world" - Nabokov on insect collections

I found it and I named it, being versed
in taxonomic Latin; thus became
godfather to an insect and its first
describer – and I want no other fame.

Wide open on its pin (though fast asleep),
and safe from creeping relatives and rust,
in the secluded stronghold where we keep
type specimens it will transcend its dust.

Dark pictures, thrones, and stones that pilgrims kiss,
poems that take a thousand years to die
but ape the immortality of this
red label on a little butterfly.

Nabokov



Nabokov also taught
tennis and boxing!

Nabokov also taught tennis and boxing!

Vladimir Vladimirovich Nabokov (1899-1977), was a man of letters. His *Lolita*, *Invitation of a Small Creature*, and other creations in novels, novellas, poems, short stories and translations published over a period of nearly six decades brought him enormous fame, as a literary giant of the mid twentieth century. His writings started at a young age of 16 years spanned three different languages, Russian, English and French.

For, Nabokov, however, butterflies were his first love. His first training in butterfly collection and handling was from his mother right at the age of seven. Enjoying an elite life during those years and of course through out his life, he fancied collecting insects and butterflies in particular. His first attempt at describing a new species of butterflies was at the age of 12. Such was his inordinate passion for butterflies, in one of his interviews, he recalled his fascinations for them. *'But I also intend to collect butterflies in Peru or Iran before I pupate.....Had the Revolution not happened the way it happened, ...I also think that my entomological occupations would have been more engrossing and energetic and that I would have gone on long collecting trips to Asia. I would have had a private museum'.*

In the midst of revolutions and escapades from one country to another, he managed to sustain his interest in butterflies. Landing ultimately at Harvard as a Research Fellow and serving as unofficial curator of Lepidoptera at the Museum of Comparative Zoology. He was known for meticulous and extraordinary acumen for details and variations. He diligently documented these in his own drawings. His group of interest at the time was *Polyommatus* (*Lycaenidae*), that were earlier called *Plebejinae* commonly called Blues, of the North America. He was a serious taxonomist and had a great eye for details. While he himself had published many new species and new descriptions of known species of *Lycaenidae*, *Nabokovia* Hemming, 1960 is named after him by Arthus Francis Hemming. Unfortunately,

his passion notwithstanding, he was compelled to lookout for avenues to make a living, much beyond the meager 1000 dollars a year at the museum. Cornell attracted him with an instructorship on literature. It was during this time when he found time for completing unfinished novels and the one that changed his fortune, *Lolita*, came out. Followed later was a flurry of literary products from the pen of Nabokov.

Although Lepidoptery was his first love, the other avocation, literature, besieged Nabokov in the years later. Consequent upon his success with *Lolita*, which brought a fortune, Nabokov almost left his primary tryst with the blues. And that perhaps cost many a monographs on the Lepidoptera taxonomy for the world at large.

The commonality

It is worth pondering over these ideas of entomologists taking to new or a different avocation at the cost of the science of insects. To be honest, human history is replete with unending list of achievers in fields that are clearly disparate. The point of consideration is the loss to science of insects. Swammerdam's evangelization limited his contribution to study of insects. Kinsey, immersed in his newfound glory with sexology last out on the Cynipidae while the Lepidoptery got its blues from the success of *Lolita*. Swammerdam, Kinsey and Nabokov made name and fame and perhaps, at least, as the latter two did, there was a promise of new life in their avocations. It is regrettable that avocations of these great entomologists inflicted an enormous loss to the science of insects. Nevertheless, it is possible that their primary training in Entomology helped excel in fields beyond the bounds of their first love.

Swammerdam, it is said, was tremendously influenced by his knowledge of insects. To him, the caterpillar served as the bodily life on earth and the death of the body was seen in the form of pupa that waited for a liberation, and the adult butterfly that flowed out of the pupa represented in all its glory, the resurrection. His own finding of the metamorphosis of an insect, for Swammerdam, served as the most ideal metaphor for the life of a Christian soul and no doubt, he was the most popular among the evangelical Christians of those days that he spent with Bourignon.

Kinsey had a keen eye for variation. Perhaps, first of the Darwinian tenets took a powerful hold on his intellect, that led to his unfathomable interest in recording the enormous diversity of gall structures of each cynipid wasp that he came across. Three years of back breaking survey for the cynipids of US of America and a whopping 5 million specimens is an enviable achievement. I, for one, would be the first to be jealous of his sheer industry and an acumen for recording the variations in plant gall wasps. How many insect taxonomists can we find that can match Kinsey in his collections and in such short time. The manifestation of what to come forth was perhaps best evident in his doctoral work itself. And I am proud that he was basically an Entomologist. Beyond the emotional feelings, of course, is the question of how the study of insects provided the basic training in biological studies that can get conveniently extended even to the sociological domains. Kinsey, according to his peers, was the most passionate observer of biological variation. His training in taxonomy provided all the required skills in appreciating the biological variation, the most basic of the tenets of Natural Selection. Therefore, it was but logical that he conveniently extended his scientific skills, gained in the pursuit of cynipid taxonomy, to human sexology. Despite being brought up in a strictly religious environment, Kinsey was a hardcore scientist, an atheist by conviction. His biology was tremendously influenced

by the Darwinian thinking, and rightly so as Theodosius Dobzhansky has put it, *nothing in biology makes sense unless it is viewed in the light of evolution*.

It was therefore, but natural for Kinsey to question the 'morality' as the ideal representative of what the practice is. The result was the flabbergasting revelation of a sea of difference in what was preached and the practice. Out was the cat for people of the world, to acknowledge reality as different from morality being taught. Inherent in his science of sexology was the in built appreciation gained for the variability in nature through the taxonomy of Cynipidae. Not to stop at that, the diligence and the knowledge of the system of animal systematics, perhaps played a pivotal role in his contribution to human ethology. Despite the loss to Entomology, one has to appreciate that his training with insects provided the required skills in handling the most difficult of difficult subjects, the Human Sexology.

Nabokov was a master of details. His vision for the details and the meticulous documentation of the details, was the essence of what he did, be it in exploring a butterfly that he has caught or his description of the very focal character of his literary inventions. Nabokov insisted that his literary and entomological pursuits shared a common mental and psychological ground such that he sought precision of poetry in taxonomic descriptions. For him art and science *incestuously* met in an insect that he was unable to differentiate the 'aesthetic pleasure of seeing a butterfly and the scientific pleasure of knowing what it is'. So were the intensity of his appreciation for the detail, his descriptions of the butterflies perhaps are best matched by the rich and meticulous prose in his literary works. Beyond these limits of the meticulous details were the Swammerdamian metaphors that incubated in the eggs, grew as a caterpillar and only to be pupated before the resurrection in the form of a liberated butterfly provided the richness for the language and the required mysticism of the metaphors. Perhaps, Nabokov gained much more from his literary odyssey to compensate what he lost as an entomologist. Descriptive natural history that failed to provide him the status of a giant among the Lepidopterists provided the mind to appreciate the underlying details that flew out in the form of lyrical prose, and could put Nabokov in the literary high pedestal.

Thus, in essence, personified in the lives of the three ardent entomologists, the loss to the study of insects, was more than compensated by the outputs in other avocations, be it another branch of science, art or the religion. Loss perhaps of a monograph of Polyommatus was made up much beyond the expectation in the form of *Lolita* or the *Invitation of a Beheading*, the very own Nabokovian products of intellect and industry. The appreciation of the fact of variation as the essential biological rule and an understanding of the ways the science works provided Kinsey the wherewithal to pursue and lay a path breaking foundation for the science of human sexology. It is another matter, however, that he extended his arm too long to touch the core of the mystic feminine sex life that bundles up every bit of the mores of every society, with US of America not being an exception, that dwindled further flow of funds to pursue his new found love. Kinsey reports are a manifestation of what passionate perseverance can produce and how important it is to have the courage to question the accepted norms in the confines of morals or the conventions of scriptures to find and establish novel paradigms in science. Despite a strict religious upbringing, Kinsey was an atheist to the core. For him, *there was no Bible beyond the Will*. Ability to see life's metaphors in other forms of life, and in this case, insects, must have made Swammerdam to react to the 17th century societal structure. Ingrained in his evangelization was the audacity of knowledge; the knowledge of life forms, that was his very own.

Contrasting Kinsey, Nabokov or Swammerdam, it is evident, that the initial passion for insects in the pursuit of knowledge provided all the necessary foundation to express itself in a field that was

maximally different even if not opposing to attract, more importantly, both fame and fortune. Commonality of the perceptual philosophy that is underlying in the primary profession and the new avocation provided the best of the answers, a manifestation of biblical *wisdom*, and the scientific power of lateral thinking. Much beyond the external dissimilarities, it is the underlying internal procedures, the interplay of theory and empiricism that provides the common psychological ground for a person to excel in seemingly disparate fields of human endeavour. Perhaps this is best summed up in the words of Nabokov, 'there is no science without fancy and no art without facts'. While the manifestation in itself can be quite different, the commonality of the underlying ability to handle the new avocation marks the all important '*eidos*' or essence of the underlying wisdom, in scientific parlance "replications with a difference".

-With apologies to S.J. Gould for meeting neither the intellect nor the language, but yet attempting a replication that is not so different!

Dr. Leslie C. Coleman Memorial National Symposium on Plant Protection
4th – 6th Dec 2008

Auditorium, North Block, College of Agriculture, UAS, GKVK, Bangalore 560 065, INDIA

PROGRAMME

Date	Inauguration			I Session	
4 Dec, 2008	0900-0930 h	0930-1145 h	1146-1200 h	1201 – 1235 h	1236-1330
	Participants to affix posters	Inauguration by Shri B. S. Yeddyurappa, Hon'ble Chief Minister of Karnataka Key-note address by Dr. T. P. Rajendran ADG(PP), ICAR, New Delhi		Tea break	Sonny Ramaswamy Purdue University, USA
		Poster Session - 1331 to 1455 h			
Date	II Session				
4 Dec, 2008	1500-1535 h	1540-1625 h	1626-1640	1641-1735	1800-1900 h
	Dr. S. Kumaraswamy Agrochemicals Policy Group, Mumbai	Dr. R. S. Chouhan Matrix Agriscience, Hyderabad	Tea-Break	Dr. Vinod Kumar CCRI, Balehonnur	Cultural Programme Break for Dinner
Date	III Session				
5 Dec, 2008	0900-0930 h	0931-1005 h	1010-1045	1046-1105	1110 – 1145 h
	Participants to affix posters	Dr. R. Gadagkar IISc, Bangalore	Dr. B. Subrahmanyam IARI, New Delhi	Tea Break	Dr. K. N. Ganeshaiah UAS, Bangalore
		Dr. Y. L. Nene* Hyderabad	Dr. C. Chattopadhyay* Hyderabad		Dr. K. S. Sastry* Tirupati
Date	Poster Session - 1316 to 1415 h				
Date	V Session				
5 Dec, 2008	1416-1450 h	1500 -1535 h	1536-1555	1600-1635	1640 - 1715
	Dr. S. Ramani CPRI, Shimla	Dr. Rohini Balakrishnan IISc, Bangalore	Tea break	Dr. R. K. Lakra CCSHAU, Hisar	Dr. K.P. Jayanth BCRL, Bangalore
	Dr. H.R. Reddy* Bangalore	Dr. Srikant Kulkarni* Bangalore		Dr. M. K. Naik* UAS, Raichur	Dr. S. J. Singh* Pune
					IUSSI Business meeting

Date	VII Session				VIII Session		
	0900-0930 h	0931-1005 h	1010-1045	1046-1105 h	1110 - 1145 h	1150-1235	1240-1315
6 Dec, 2008	Dr. G. C. Tewari ADG(Edn), ICAR	Dr. Opendar Koul Chandigarh	Dr. G. T. Gujar IARI, New Delhi	Tea Break	Dr. N. K. Krishnakumar IIHR, Bangalore	Dr. S.B. Dandin CSB, Bangalore	Lunch break
		Dr. R.D. Rawal* Bangalore	Dr. O.R. Reddy* MANAGE, Hyderabad		Dr. K. S. Krishna Prasad* IIHR, Bangalore		
Poster Session - 1316 to 1415 h							
Date	IX Session			X Session			
	1416-1450 h	1500 -1535 h	1536-1555 h	1600-1635 h	1645-1720 h	1720-1750	
6 Dec, 2008	Dr. B. V. Patil UAS, Bangalore	Dr. Krishna Naik UAS, Dharwad	Tea break	Dr. Jason Gibbs York University, Canada	Dr. R. J. Rabindra PDBC, Bangalore		
	Dr. Srinivasulu Naidu* SV University Tirupati	Dr. Sudhakar Bhat* CCRI, Balehonnur					

* Talks in parallel session at the Conference Hall, North Block, College of Agriculture, GKVK

Lead talks (Entomology/Sericulture/Apiculture)

at Dr. Leslie C. Coleman Memorial National Symposium on Plant Protection, 4th to 6th
December, 2008, Auditorium, College of Agriculture, North Block, UAS, GKVK,
Bangalore 560065, INDIA.

Sl No.	Speaker	Topic
1	Dr. Dandin, S. B.	Current Status and Prospects of Indian Sericulture Industry.
2	Dr. Ganeshiah, K. N.	Haldane's God and the Honoured Beetles: Cost of a Quip.
3	Dr. Gujar, G. T.	Biochemical Basis of Insect Defenses
4	Dr. Jason Biggs	Barcoding the Bees of the World: Removing the Taxonomic Impediment for an Economically Essential Group of Organisms.
5	Dr. Jayanth, K. P.	Role of Pheromones in IPM: Limitations and Prospects.
6	Dr. Krishnakumar, N. K.	IPM in Horticulture
7	Dr. Krishna Naik	Impact of Rapid Roving Surveys on Monitoring and Management of Pigeonpea Pod Borer.
8	Dr. Kumarswamy, S.	Role of Modern Crop Protection in Ensuring National Food Security
9	Dr. Lakra, R. K.	Pollination-An Essential Agri-input in Maximizing Pollination and Productivity of Crops.
10	Dr. Opendar Koul	Biopesticides and Insect pest Management: an Anti-feedant Approach.
11	Dr. Patil, B. V.	Experience in Cotton IPM Implementation.
12	Dr. Rabindra, R. J.	Role of Biological Control in IPM.
13	Dr. Raghavendra Gadagkar	Possible Novel Functions of Aggression (dominance behaviour) in the Primitively Eusocial wasp <i>Ropalidia marginata</i> .
14	Dr. Ramani, S.	Invasive Pests: Uninvited Company in a Changing and Shrinking World.
15	Dr. Ramamurthy, V. V.	Insect Systematics: Current Status and Future Challenges.
16	Dr. Rohini Balakrishnan	Using Acoustic signals to Identify and Monitor Cricket Species.
17	Dr. Rajendran, T. P.	Future Entomological Research for Crop Health Management
18	Dr. Sonny Ramaswamy	Leslie Coleman's 20 th Century Legacy: Apropos to 21 st Century Challenges?
19	Dr. Subrahmanyam, B.	Advances In Insect Physiology : Basis for Novel Pest Management Strategies.
20	Dr. Tewari, G. C.	Educational Needs in Plant Protection
21	Dr. Vinod Kumar, P. K.	Coffee Plant Protection: From Dr. Coleman to the Present.

Lead talks (Plant Pathology)

at Dr. Leslie C. Coleman Memorial National Symposium on Plant Protection, 4th to 6th
December, 2008, Auditorium, College of Agriculture, North Block, UAS, GKVK,
Bangalore 560065, INDIA.

Sl No.	Speaker	Topic
1	Dr. Chattopadhyay, C.	Weather-based Forecasting Models for Major Diseases and Aphids of Indian Mustard .
2	Dr. Krishna Prasad, K. S.	Epidemiology and Management of Potato Diseases.
3	Dr. Manoharachari, C.	Fungal Resources for Human Welfare.
4	Dr. Naik, M. K.	Global and Strategic Issues in Aflatoxin Contamination and Management with Special Reference to Chilli.
5	Dr. Nene, Y. L.	History of Plant Pathology in Asia.
6	Dr. Rawal, R. D.	Epidemiology and Management of Fruit Crop Diseases.
7	Dr. Reddy, H. R.	Indigenous Technical Knowledge in Plant Disease Management.
8	Dr. Reddy, O. R.	Invasive Plant Diseases and Quarantine.
9	Dr. Sastry, K. S.	Newly Emerging Plant Virus Diseases in India and Their Management.
10	Dr. Singh, S. J.	Management of Vegetatively Propagated Virus Diseases in India.
11	Dr. Srikant Kulkarni	Recent Advances in Physiologic Specialization of Wheat Rusts: An Overview.
12	Dr. P. Srinivasulu Naidu	Recombinant DNA Technology Based Diagnostics for Detection and Identification of Plant Viruses.
13	Dr. Sudhakar Bhat	Disease Management in Coffee.

Programme : 4th December 2008

Entomology

Systematics and biodiversity of insects and plant pathogens

EA-01	05	Devaraj, R. R. Sundararaj	Galls in Indian trees- A review and its economic importance
EA-02	06	R. Sundararaj Rashmi R. Shanbhag	Comparative infestation of termites in different <i>Eucalyptus</i> species in and around Bangalore
EA-03	07	Rashmi R. Shanbhag R. Sundararaj B. Lingappa	Species composition of termites and their infestation in <i>Eucalyptus</i> plantation
EA-04	13	Manivannan, S. H. C. Nagaveni R. Sundararaj	Insects infesting the seeds of <i>Syzygium malabaricum</i> (Bedd.) Gamble., an endemic tree of Western Ghats
EA-05	17	Shashikumar M.G. Venkatesha	Diversity and ecology of butterfly fauna of Bangalore region
EA-06	45	K.S. Jagadish Y. G. Shadakshari D.P.Jagannatha K. Karuna K.N. Geetha, K.T. Puttarangaswamy	Role of ant (Hymenoptera: Formicidae) fauna in sunflower (<i>Helianthus annuus</i> L.)
EA-07	76	R. Girish N.G.Kumar	Influence of organic manures and chemical fertilizers on the abundance of soil arthropods in soybean ecosystem
EA-08	85	A. Naganagoud B.V. Patil, Sharanabasappa A.C.Hosamani	Pheromone trap catches of major lepidopteran pests of cotton in Raichur
EA-09	86	A.C. Hosamani K.A. Kulkarni B.V.Patil	Status of key pests of chilli in Upper Krishna Project area
EA-10	92	B. K. Dikshit	Biodiversities of lepidopteran insect – Modal ecorace of <i>Antheraea mylitta</i> Drury
EA-11	119	Jayalaxmi Narayan Hegde	Insect pests of potato (<i>Solanum tuberosum</i> L.) in Anekal

		<i>B.V.Shwetha, Chakravarthy A.K. B.S.Baavaraju</i>	(Bengaluru) and Hassan
EA-12	125	<i>A. Q. Rather</i>	Biodiversity of mites associated with medicinal and aromatic plants in Kashmir
EA-13	126	<i>Chitra Shanker G. Katti Ch. Padmavathi</i>	Invertebrate biodiversity of irrigated rice ecosystem with organic amendments
EA-14	165	<i>V. Radhakrishnan K. Ramaraju</i>	Mesostigmatid mites associated with insects in Tamil Nadu, India
EA-15	176	<i>H. Basappa</i>	Biodiversity of arthropods and vertebrates in sunflower ecosystem
EA-16	183	<i>Manmeet Brar Bhullar Paramjit Kaur M.S. Dhooria D.S. Bath</i>	First record of spider mite, <i>Tetranychus urticae</i> Koch (Acari: Tetranychidae) on muskdana (<i>Abelmoschus moschatus</i>) in Punjab
EA-17	189	<i>B. Vasantharaj David, R. EA Sundararaj R. Pushpa</i>	Whiteflies (Hemiptera: Aleyrodidae) of Karnataka
EA-18	198	<i>M. S. Chethan C.T. Ashok Kumar N. Krishnamurthy</i>	Inventory of insect pests of aerobic rice
EA-19	209	<i>Sangita Sharma S. P. Bhardwaj</i>	Spatial distribution of European red mite, <i>Panonychus ulmi</i> (Koch) in different quadrants of apple tree
EA-20	222	<i>P.M. Prasanna N. G. Kumar P. Nirmala</i>	Effect of varied dosages of FYM and fertilizer on the abundance of soil arthropods in soybean ecosystem
EA-21	226	<i>P. Nirmala N.G. Kumar A.N. Balakrishna</i>	Impact of Simarouba cultivation on soil invertebrates in wasteland ecosystem
EA-22	227	<i>Kumar, N.G. Nirmala, P. Prasanna, A.R. Balakrishna, A.N.</i>	Influence of abiotic factors on soil fauna in grassland ecosystem

EA-23	228	Kumar, N.G. Nirmala, P. Balakrishna, A.N. Guruprasad, H.	Anthropogenic impact on the soil macrofauna in different ecosystems
EA-24	234	G. G. Jaysinghe B. Mallik	Two spotted spider mite (<i>Tetranychus urticae</i> Koch, Tetranychidae) distribution and seasonal abundance on tomato
EA-25	253	Prasanna, P. M., Kumar, N. G Nirmala, P	Effect of varied dosages of FYM And fertilizer on the abundance of soil arthropods In soybean ecosystem
EA-26	255	Muralikrishna, M. Jayappa, J. Chandrashekhara, K. Revanna, R. Kumar, A. R. V.	Developmentalb of Plain Tiger butterfly, <i>Danaus Chrysippus</i> : <i>In-situ</i> breeding for <i>Ex-situ</i> conservation
EA-27	256	Nayana, E. D. S. Bhat C. A. Virakthamath	Non- <i>Apis</i> bee faunal diversity of Western Ghat region of Karnataka
Pests and disease management of for food security			
EC-01	02	Prahlad Swarnkar R.K. Patel	Seasonal incidence of gall forming black caterpillar, <i>Betousa stylophora</i> Swin. on aonla
EC-02	03	Prahlad Swarnka R.K. Patel	Biology of gall forming black caterpillar, <i>Betousa stylophora</i> Swinhoe on aonla
EC-03	12	Swapna Priya, K. Manivannan, S. H. C. Nagaveni	Disease and pest problems in the seeds of <i>Dysoxylum malabaricum</i> Bedd. and its impact on seedling production
EC-04	14	C. Lalitha K. Manjula S. Srinivasan	Effect of commonly used insecticides on <i>Nomuraea rileyi</i> sporulation
EC-05	22	V. Rooparani M. Manjunatha Mohana I. Naik	Biology and seasonal activity of the cowpea aphid, <i>Aphis craccivora</i> Koch
EC-06	24	Wajid Hasan Arvind Kumar C. P. Singh	Bioefficacy of biopesticides against larvae of mustard saw fly, <i>Athalia proxima</i> Klug. under laboratory condition

EC-07	31	Mohan I. Naik Ajiith Kumar, M. A. Manjunatha, M. Shivanna, B. K.	Population dynamics of pest complex of field bean (<i>Lablab purpureus</i>) and natural enemies of pod borers
EC-08	46	J. Meenakshi K. S. Jagadish Y. G. Shadakshari	Effect of sowing dates on the incidence of defoliators and capitulum borer in sunflower (<i>Helianthus annuus</i> L.)
EC-09	51	Jayasimha .G.T. Manjunatha, M. Mohan I. Naik	Seasonal incidence of leafhopper <i>Amrasca biguttula biguttula</i> (Ishida) and aphid, <i>Aphis gossypii</i> Glover in relation to biotic and abiotic factors on okra
EC-10	58	M. Sahu A.K. Sahu	Incidence of shoot borer, <i>Nupserha annulata apicetateae</i> (Coleoptera: Cerambycidae - Longicornia) in muga host plants and its management practices
EC-11	61	Venkatesh Hosamani S. Pradeep B.C. Hanumanthaswamy, C. Thippeswamy Rachana, R.R.	Alternate host plants of paddy earhead bug, <i>Leptocoris oratorius</i> (Fab.) (Hemiptera : Alydidae)
EC-12	62	Venkatesh Hosamani S. Pradeep B.C. Hanumanthaswamy C. Thippeswamy Rachana, R.R.	Morphometric studies on paddy earhead bug, <i>Leptocoris oratorius</i> (Fab.) (Hemiptera : Alydidae)
EC-13	65	Saritha, P. Reddy, L.K. Krishnaiah, N.V.	Influence of BPH resistance in rice on the biology of mirid bugs (Hemiptera: Miridae)
EC-14	66	Pramod Katti Naganagoud, A. Mahadevreddy and Shalini Sagar	Effect of date of sowing on the incidence of leafhoppers on sunflower
EC-15	67	Pramod Katti Naganagoud, A.	Evaluation of antiviral materials to manage thrips and necrosis virus in sunflower
EC-16	68	Brahma , K.C. Shankar Rao	Studies on the management of major pests of mulberry (<i>Morus alba</i> L.) in Orissa

EC-17	77	K.V.R. Sahu Bajpai A. K. R. Girish N. G. Kumar G. V. Manjunath Reddy	Effect of FYM and chemical fertilizers on stem fly <i>Melanagromyza sojae</i> (Zehnter) infestation in soybean
EC-18	81	Hanchinal, S.G. B.V. Patil M. Bheemanna A.C. Hosamani Sharanabasappa	Incidence of mealy bug on cotton in Tungbhadra project area
EC-19	82	Bheemanna, M., Hosamani A. C., Sharanabasappa S. G. Hanchinal	Influence of abiotic factors on cotton bollworms
EC-20	116	Rama Kant Rajat mohan M. M. Bhatt M. A. Khan	Studies on incidence of major foliar mulberry (<i>Morus alba</i> L.) insect pests and their management in agroclimatic conditions of Uttarakhand
EC-21	128	K.V. Shankar Rao	Efficacy of dinotefuron 20% SG against brown planthopper, <i>Nilaparvata lugens</i> (Stal) in Rice
EC-22	130	D. Jemla Naik D. Thippesha N.A.N. Reddy V.V. Belavadi S. D. Rangaswamy J. Venkatesha	Studies on population dynamics and management of small cardamom white fly, <i>Kanakarajella cardamomi</i> (David and Subr.) (Hemiptera: Aleyrodidae)
EC-23	131	Krishna Karmakar Debasis Mazumdar	Population dynamics of yellow mite, <i>Polyphagotarsonemus latus</i> (Banks) (Acari: Tarsonemidae) on different cultivars of jute (<i>Corchorus</i> spp.) in relation to some abiotic parameters
EC-24	134	M. D. Kamala Jayanthi Abraham Verghese	Monitoring off-season fruits for the management of sapota seed borer, <i>Trypaliitis margarias</i> Meyrick incidence
EC-25	150	Raghavendra Yaligar Nandihalli, B. S. N. Aswathanarayana Reddy	Management of coconut perianth mite, <i>Aceria guerreronis</i> (Keifer) through plant nutrition

EC-26	152	Y.H. Sujay N. Dhandapani	Effect of coloured sticky plastic covers on attraction of chilli thrips, <i>Scirtothrips dorsalis</i> (Hood)
EC-27	153	A. Tikader M. M. Borpuzari S. M. H. Qadri	Management of pests and predators in mulberry (<i>Morus</i> spp.) germplasm
EC-28	154	Deepa. P. Srinath. B.	A survey on the seasonal incidence of tukra in mulberry gardens and the adoption level of plant protection measures by the seri farmers in Andhra Pradesh
EC-29	157	F.S. Poonia Niluka Bhati	Evaluation of biopesticides and seasonal incidence of surface grasshopper, <i>Chrotogonus trachypterus</i> Blanchard on cotton crop and its management
EC-30	166	M. Kandibane L. Nadarajan	Bioefficacy of some insecticides against rice whorl maggot, leaf folder and hispa beetle
EC-31	169	C. Muthiah C. Chinniah	Coconut eriophyid mite management with nutrients and biofertilizers
EC-32	170	C. Muthiah C. Chinniah	Management of red palm weevil on coconut
EC-33	171	M. Vinoth C. Chinniah C. Muthiah N. Ganapathy	Influence of weather parameters on population dynamics of jasmine erineum mite, <i>Aceria jasmini</i> ChannaBasavanna
Plant pathology			
Systematics and biodiversity of insects and plant pathogens			
PA1	70	J. S. Prasad Nethi Somasekhar	Current status of Root-Knot Nematode <i>Meloidogyne graminicola</i> in Rice
PA2	88	Robin Sharma B.S. Vijaya Kumar	Biodiversity of Hyphomycetes isolated from leaf litter and phylloplane of <i>Azadirachta indica</i> A. Juss. from the Vengalammacheruvu forest area of Puttaparthi Mandal, Anantapur Dist., A. P., India.
PA3	103	S S Kang, Sumit Inder Kaur, Abhishek Sharma S K Thiara	Characterization of seed-borne viruses associated with cucurbits in Punjab
PA4	161	S.T. Naik,	Scenario of forest nursery diseases in Karnataka

PA5	175	V. Suryanarayana Imkongsunep Longchar Y.D. Narayana	Studies on diversity of mycotoxigenic fungi associated with seed sorghum.
PA6	188	Syed Sannaulla H. K. Ramappa K. T. Rangaswamy K. S. Shankarappa H. A. Prameela	Characterization of the virus causing fern leaf disease on tomato in Karnataka, India
PA7	211	Muhammad Saifulla N. Mahesh Vishwa Dhar	Cultural and morphological variability of isolates of <i>Fusarium udum</i> Butler collected from Southern India
PA8		Ramegowda G.K. Lingappa, S. Patil, R. K. Kulkanri, S. Kuruvinashetti, M. S. Kulkarni, J. H	Persistence of <i>Nomuraea rileyi</i> (Farlow) Samson conidia in soil
PA9	104	M. D. Maji R. N. Datta A. K. Bajpai	Biodiversity of mulberry pathogens in the eastern and north eastern part of India
Pests and disease management of for food security			
PC 1	11	Sreedevi S. Chavan Yashoda R. Hegde S. K. Prashanthi	Evaluation of fungicides against <i>Fusarium solani</i> causing wilt of patchouli
PC2	95	Sawnt U.K. S.P. Raut	Efficacy of fungicides and bio-organics against <i>Colletotrichum gloeosporioides</i> Penz. inciting cashew blossom blight in Konkan
PC3	97	R.H. Patil S.P. Raut D.R. Pawar Shruti Firake Vidya Mane	<i>In vivo</i> effect of fungicides, bio-organics, botanicals and a bio-agent on pod and haulm yield of groundnut Cv. Konkan Gaurav and Cv. Konkan Tapora

PC4	98	R.H. Patil S.P. Raut D.R. Pawar A.D. Gawande Shruti E. Firake	Field evaluation of fungicides, bio-organics, botanicals and a bio-agent against major fungal diseases of groundnut
PC5	110	K.Karuna K.S.Jagadish K.N.Geetha Y.G.Shadakshari K.T.Puttarangsawmy	Management of <i>Alternaria</i> leaf spot of sunflower using fungicides
PC6	111	I. K.Kalappanavar S. A. Desai M. M. Mirajkar B. N. Patil	Foot rot of wheat: management priorities
PC7	129	Gurudatt M. Hegde Mahabaleshwar Hegde	Integrated management of Sigatoka leaf spot of banana
PC8	159	H. Narayanaswamy Syed Sannaulla K.S. Sheshagiri M. Dinesh Kumar	Integrated management of basal stem rot disease of arecanut
PC9	168	Dr. Gurudatt M. Hegde Dr. Hemant G. Hegde	Integrated management of foot rot of black pepper
PC10	191	Shamarao Jahagirdar S.T.Kajjidoni Matiwade, P.S. Devappa, V	Management of Tobacco Mosaic Virus in beedi tobacco in Karnataka through organics
PC11	206	Yashoda R. Hegde Ammajamma R	Evaluation of fungicides for management of <i>Rhizoctonia bataticola</i> infecting <i>Coleus forskohlii</i> Briq.
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Entomology			
Pests and disease management of for food security (continued)			
EC-35	173	C. Chinniah	Biology of red spider mite, <i>Tetranychus urticae</i> Koch on okra

		C. Muthiah	(<i>Abelmoschus esculentus</i> (L.) Moench)
EC-36	202	N. S. Niranjana C.T. Ashok Kumar S. Subramanya	Seasonal incidence of thrips on grapes
EC-37	204	Kavya Sudha, H.C.M. N. Srinivasa S. Onkarappa	Control of chilli yellow mite, <i>Polyphagotarsonemus latus</i> (Banks) (Acari: Tarsonemidae) using mineral oil and newer acaricides
EC-38	205	Kavya Sudha, H.C.M. N. Srinivasa S. Onkarappa	Control of okra red spider mite, <i>Tetranychus macfarlanei</i> (Acari: Tetranychidae) using mineral oil and newer acaricides
EC-39	208	Tariq Ahmad Shabnum Nabi	Effect of different temperatures on the incubation period and hatching of eggs of bamboo locust, <i>Choroedocus illustris</i> Walker
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EN-18	107	M. Patnaik M. V. Santhakumar N. K. Das P. Mitra A. K. Bajpai	Determination of effective concentration of three insecticides to control on whitefly, <i>Dialeuropora decempuncta</i> , a major pest of mulberry
EN-19	115	R. Channakeshava R. Manu K. Rajashekarappa	Use of biorational pesticides in the management of cotton sucking pests
EN-20	123	I. S. Patel S. A. Patel Balakrishnagowda Gangarathnamma, B.S. Kumar, A. R. V. Jayappa, J.	Evaluation of various insecticides for their safety to honey bee, <i>Apis florea</i> in fennel crop Geographic variation in the insecticidal activity of neem trees in Karnataka
EN-21	124	Rather, A.Q. M. I. Dar	Field efficacy of some selected botanicals, acaricides and oil against two-spotted spider mite, <i>T. urticae</i> and safety to predatory mites on apple (<i>Malus domestica</i>)

EN-22	137	Ramaraju, K. J. Kavitha P. Pretheep Kumar	Demonstration of integrated management package for coconut eriophyid mite, <i>Aceria guerreronis</i> in Tamil Nadu, India
EN-23	138	S.I. Harlapur M.C. Wali C.P. Mallapur	Integrated pest and disease management in maize genotypes in irrigated ecosystem
EN-24	142	M. V. Santha Kumar S.K. Mukhopadhyay P. Mitra A. K. Bajpai	Efficacy of botanical pesticides on pink mealy bug, <i>Maconellicoccus hirsutus</i> (Green) (Hemiptera: Pseudococcidae), a major pest of mulberry, <i>Morus alba</i> (L.)
EN-25	143	S.G. Eswara Reddy A.G. Powar	Efficacy of dinotefuron 20% SG against brown planthopper, <i>Nilaparvata lugens</i> (Stal) in Rice
EN-26	145	Manzoor A. Rangrez A. Q. Rather	Studies on efficacy of biorational pesticides in the management of European red mite, <i>Panonychus ulmi</i> Koch on apple in Kashmir
EN-27	147	Pradyumn Singh N.S. Bhadauria S.P.S. Tomar R. K. Reddy	Bioefficacy of botanical extracts as foliar application against <i>Spodoptera litura</i> (Fabricius)
EN-28	149	Raghavendra Yaligar B. S. Nandihalli N. Aswathanarayana Reddy	Efficacy of botanicals and biorational pesticides against coconut perianth mite, <i>Aceria guerreronis</i> (Keifer)
EN-29	164	G.M.V. Prasada Rao A.D.. G Grace	Role and status of new insecticides vis-à-vis conventional insecticides against the cotton bollworm, <i>Helicoverpa armigera</i> (Hub.)
EN-30	172	M. Vinoth C. Chinniah C. Muthiah N. Ganapathy	Ecofriendly management of erineum mite <i>Aceria jasmini</i> on jasmine
EN-31	177	Shekharappa K. A. Kulkarni	Effect of biorational pesticides on <i>Trichogramma chilonis</i> Ishii, an egg parasitoid of <i>Chilo partellus</i> Swinhoe
EN-32	199	M. S. Chethan C.T. Ashok Kumar N. Krishnamurthy	Efficacy of selected insecticides and <i>Metarrhizium anisopliae</i> against paddy stem borer, <i>Scirpophaga incertulas</i> (Walker)

EN-33	203	N. S. Niranjana C.T. Ashok Kumar S. Subramanya	Efficacy of selected insecticide molecules and bio-pesticides against thrips
EN-34	210	S.P. Bhardwaj Sushma Bhardwaj	Susceptibility of European red mite, <i>Panonychus ulmi</i> (Koch) infesting apple to horticultural mineral oils
EN-35	217	S. R. Doiphode C. S. Patil A. G. Chande	Field toxicity of some novel insecticides to sucking pests of cotton and their safety to coccinellid predators
EN-36	218	S. R. Doiphode C. S. Patil A. G. Chande	Relative toxicity of some novel insecticides to grubs and adults of <i>Cheilomenes sexmaculata</i>
EN-37	260	P. Kavitha Kumari Manju A.R.V. Kumar	Insecticidal activity of leaves of some plants on the diamond back moth (DBM), <i>Plutella xylostella</i> (Lepidoptera: Plutellidae)
Plant protection in protected cultivation and household pests			
EO-01	08	S. Shailaja P. S. Jagadish	Influence of grain moisture content on survival and development of rice meal moth, <i>Corcyra cephalonica</i> Stainton (Lepidoptera: Pyralidae) on proso millet (<i>Panicum miliaceum</i> L.)
EO-02	87	Bhargava, M.C. R.K. Choudhary S.R. Yadav B.L. Jat	Host preference and host biology relation of khapra beetle, <i>Trogoderma granarium</i>
EO-03	229	P. Nirmala P.S. Jagadish Neelu Nangia P. M. Prasanna	Evaluation of different hosts for the infestation of rice meal moth, <i>Corcyra cephalonica</i> Stainton
Education and training needs in plant protection			
EP-01	127	K.V. Shankar Rao S.K. Patnaik D. Chakravorty R.P. Khanna	Tasar food plant protection -- Assessment of training needs of sericulturists of Chhattisgarh
Plant pathology			

Classical HPR			
PK1	63	K. Madhan Mohan B. Aruna Kanthi K. Ratna Madhavi S. M. Balachandran C. S. Reddy M. Srinivas Prasad	Identification of blast resistance genes in <i>indica</i> rice cultivars
PK2	109	K. Karuna K.S.Jagadish K.N.Geetha Y.G.Shadakshari K.T.Puttarangaswamy	Field evaluation of advanced hybrid lines of sunflower against necrosis virus disease and <i>Alternaria</i> blight of sunflower
PK3	140	Syed sannaulla H. K. Ramappa K. S. Shankarappa K. T. Rangaswamy	Screening of tomato genotypes for resistance against fern leaf disease
PK4	146	Nirupma Sharma V S Thakur	Evaluation of germplasm of apple for resistance against the apple blotch disease (<i>Marssonina coronaria</i>) in Himachal Pradesh
PK5	160	D. Krishnaveni S. K. Gautam G.S. Laha C. S. Reddy T. Ram	Wild rice (<i>Oryza longistaminata</i>) resistance to rice tungro virus and introgression of gene into high yielding variety
PK6	190-212	S.T.Kajjidoni Shamarao Jahagirdar P.S.Matiwade	Identification of sources of multiple resistance, against major diseases of Beedi tobacco in Karnataka
PK7	223	S. G. Mantur	Screening of finger millet genotypes for resistance to blast
PK8	L1	Kumar. B Devappa.V. Kamanna. B.C. Shamarao.J, L.Hegde	Screening of different genotypes of <i>Coleus forskohlii</i> against <i>Fusarium chlamydosporum</i> and <i>Meloidogyne incognita</i> causing wilt complex
PK9	L17	Anil Kumar	Evaluation of tomato lines introgressed from <i>Lycopersicon</i>

		Nagaraju, N. Padmaja, A. S. Govindappa, M. R. Muniyappa, V. Hanson, P. Colvin, J	chilense for resistance to leaf curl virus disease
PK10		H.K.Ramappa K. Chandrashekar C.S.P. Patil	Identification of resistance sources against rust and powdery mildew diseases of field pea
PK11	41	N. Thammaiah. V.C. Kanamadi A.M. Shirol	Screening of banana germplasm against burrowing nematode (<i>Radopholus similis</i>)
PK12	42	N.Thammaiah B.Sathynarayana Reddy B.S. Kulkarni P.M.Gangadharappa M.S.Kulkarni	Screening of gerbera genotypes under different environmental conditions
Biological control of pests and diseases			
PL1	11	Swapna Priya, K. H.C. Nagaveni	Evaluation of antagonistic property of <i>Trichoderma</i> species against a seed-borne pathogen <i>Phomopsis archeri</i>
PL2	132	S. Lingaraju S.B. Mallesh	Bioefficacy of native plant growth promoting <i>Rhizobacteria</i> (PGPR) for suppression of <i>Meloidogyne incognita</i> infecting <i>Coleus forskohlii</i> in Karnataka.
PL3	132	S.B. Mallesh S. Lingaraju	<i>In-vitro</i> screening of plant growth promoting rhizobacteria (PGPR) against <i>Fusarium chlamydosporum</i> infecting <i>Coleus forskohlii</i>
PL4	135	B S Vijaykumar U.Avinash	Studies on endophytic hyphomycete <i>Acremonium</i> sp. and the effect of its crude metabolite on <i>Drechslera puttapparthii</i> , a pathogen of royal palm
PL5	161	M.B.N.Chakravarthy U.Sivaramakrishna	Studies on semi-solid fermentation of <i>Drechslera puttapparthii</i> sp.nov. and testing its enzyme activity.

PL6	122	Robin Sharma <u>B. S. Vijaya Kumar</u> Ganesh Iyer N. Umashankar Kumar J.M.Nidagundi Nagappa M.A.Basavanneppa R. Basavarajappa	Evaluation of bio-pesticides against sheath blight of rice (<i>Rhizoctonia solani</i>) in Tungabhadra command area
PL7	89	D.K.Swathi K.R.N.Reddy C.S.Reddy	<i>Bacillus subtilis</i> : an effective biocontrol agent against rice pathogens
PL8	105	M. D. Maji R.N. Datta A K. Bajpai	Evaluation of botanical, biocontrol agents, plant activators and fungicides for management of mulberry diseases

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- 52 Virupaksha Gouda U. Patil PhD Scholar, UAS, Dharwad

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- 4 Dr. M. M. Balakrishna, Entomologist, CCRI, Balehonnur
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- 6 Dr. M. Sudha, Asst. Plant Pathologist, CCRI, Balehonnur

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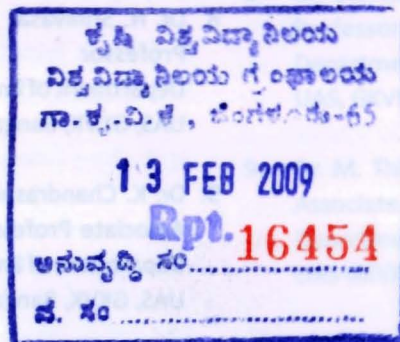
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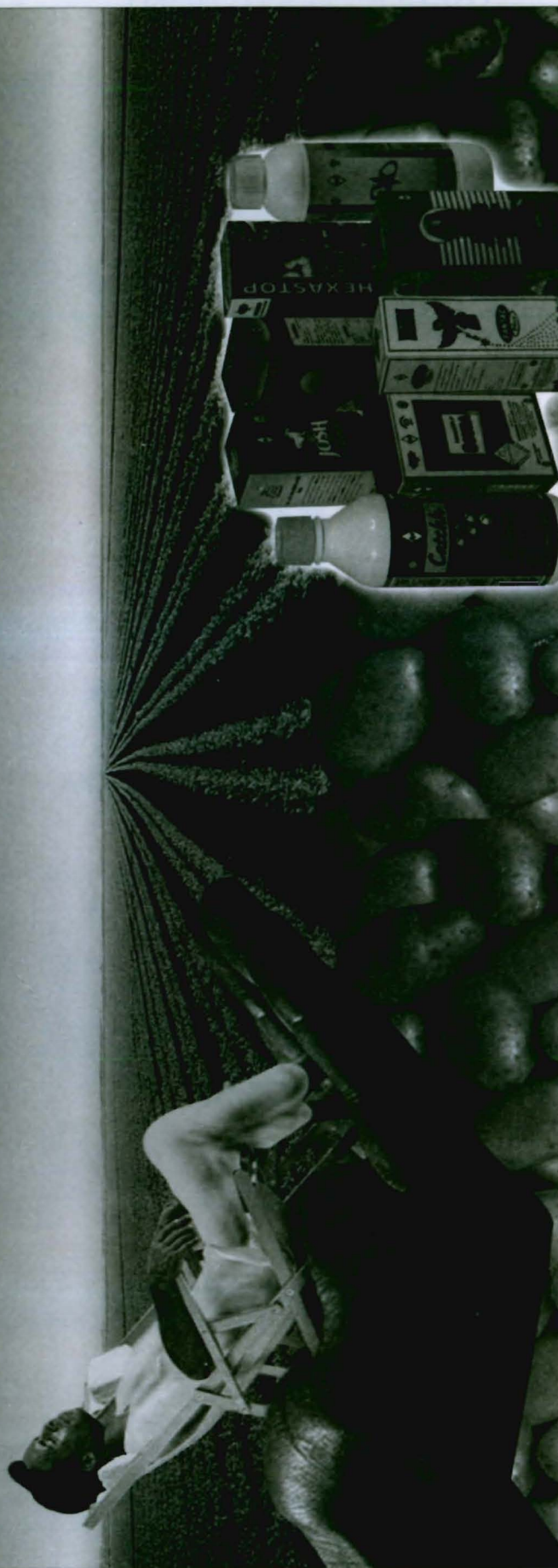
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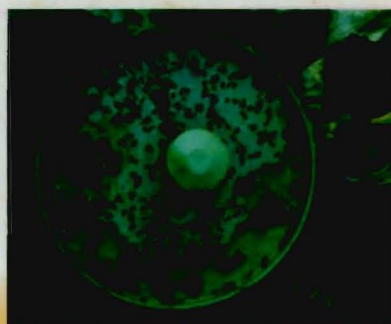
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